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(54)【発明の名称】　情報処理システム用ユーザインタフェース

(57)【要約】
【課題】　全てネットワークによって接続された、ユーザ用のワークステーションと、ワークステーションで作成した印刷ファイルを印刷できるいくつかのプリンタとを含む情報処理システムを提供すること。
【解決手段】　プリンタに送信されたユーザの印刷ジョブは、ユーザのワークステーションにおいてそれらのジョブが転送されたプリンタの名前と一緒にリスト内に表示される。これは、まだ終了していないジョブに適用され、この場合、ジョブの状態も示される。また、これはすでに終了したジョブにも適用される。このようにしてユーザは自分のジョブを容易に見つけることができる。

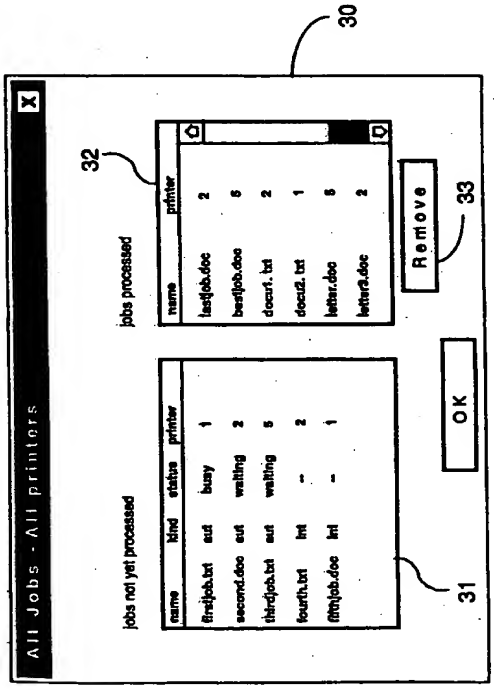

Fig. 9

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【特許請求の範囲】
【請求項１】　処理装置と、表示画面と、キーボードおよびマウスなどのオペレータ制御手段とを備えた少なくとも１つのワークステーションと、
それぞれ制御装置を備えたいくつかのプリンタと、
ワークステーションとプリンタとが接続されたデジタルネットワークとを含む情報処理システムであって、
プリンタと通信して、前記プリンタに印刷ジョブを送信し、かつ前記プリンタから状態情報を呼び出すかまたは受信するために特定のユーザ用に個人化されたプログラムがワークステーションに備えられ、
前記プログラムが、
所定の複数のプリンタにおける前記ユーザの印刷ジョブの状態に関する情報を収集する手段と、
前記ユーザの印刷ジョブの現実化された概要を更新する手段と、
各印刷ジョブについて、少なくともその印刷ジョブが送信されたプリンタの識別を含む前記ユーザの印刷ジョブの現実化された概要をワークステーション表示画面に表示する手段とを含む情報処理システム。
【請求項２】　前記プログラムが、すでに終了した印刷ジョブをワークステーション表示画面上に別個に表示する請求項１に記載のシステム。
【請求項３】　前記プログラムが、まだ終了していない印刷ジョブをそれらの現在の状態に関する情報と共にワークステーション表示画面に表示する請求項１に記載のシステム。
【請求項４】　前記プログラムが、特定の印刷ジョブ用のオペレータ制御手段がある場合に、ユーザによるコマンドにより、すでに終了した印刷ジョブを表示された概要から除去できる手段を備えている請求項１または２に記載のシステム。
【請求項５】　前記所定のいくつかのプリンタが接続された全てのプリンタを含む請求項１に記載のシステム。
【請求項６】　処理装置と、表示画面と、キーボードおよびマウスなどのオペレータ制御手段とを備えた少なくとも１つのワークステーションと、
それぞれ制御装置を備えたいくつかのプリンタと、
ワークステーションとプリンタとが接続されたデジタルネットワークとを含む情報処理システム用に使用されるプログラムであって、
プリンタと通信して、前記プリンタに印刷ジョブを送信し、かつ前記プリンタから状態情報を呼び出すかまたは受信するために、
特定のユーザ用に個人化され、所定の複数のプリンタにおける前記ユーザの印刷ジョブの状態に関する情報を収集する手段、
前記ユーザの印刷ジョブの現実化された概要を更新する手段、
各印刷ジョブについて、少なくともその印刷ジョブが送

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信されたプリンタの識別を含む前記ユーザの印刷ジョブの現実化された概要をワークステーション表示画面に表示する手段として各ワークステーションを作動させるためのプログラムが記録されているコンピュータ読取り可能記憶媒体。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ユーザ用の少なくとも１つのワークステーションと、ワークステーションで作成した印刷ファイルを印刷できるいくつかのプリンタとを含む情報処理システムに関する。
【０００２】
【発明が解決しようとする課題】この種のシステムを使用するとき、特定の印刷ファイルを転送したプリンタを覚えていることは、ユーザにとってしばしば困難である。印刷ジョブを探索する１つの可能な方法は、個別の印刷待ち行列を点検することであるが、これは時間のかかる仕事である。その上、終了した印刷ジョブは印刷待ち行列から消え、その後は全く見つけることができなくなる。その後ユーザには、各プリンタを見て自分のプリントがたまたまそこに存在するかどうかを調べる以外に方法はない。
【０００３】
【課題を解決するための手段】本発明は、プリンタとの通信のためにワークステーション内で作動するプログラムが、所定の複数のプリンタにおける前記ユーザの印刷ジョブの状態に関する情報を収集する手段と、前記ユーザの印刷ジョブの現実化された概要を更新する手段と、各印刷ジョブについて、少なくともその印刷ジョブが送信されたプリンタの識別を含む前記ユーザの印刷ジョブの現実化された概要をワークステーション表示画面に表示する手段とを含むことによって、上述の情報の必要を満たす。
【０００４】このようにして、ユーザは自分の未処理の全ての印刷ジョブおよびそれらを転送したプリンタの概要を、たとえそれらがすでに終了していても、迅速に入手することができる。
【０００５】本発明の一実施形態では、まだ終了していない印刷ジョブの現在の状態が与えられる。これは、次のような形、すなわち「待機中、処理中、エラー発生」の形か、またはそれらの印刷待ち行列における通し番号の形で行うことができる。また、すでに終了した印刷ジョブの状態も与えることができる。その場合、状態は、例えばプリントが置かれた供給トレーの形を取るか、または目的に適した周知の手段を備えたプリンタで、プリントが置かれた供給トレーが空になっている場合に「除去」される。
【０００６】別の実施形態では、終了した印刷ジョブは、ユーザがそれらを選択して、それらに除去コマンドを出すまで、概要から除去されない。これは、特定の時

間後に自動的に除去する場合より有利である。このようにして、ユーザは、特定のジョブのプリントを取り出さなければならないことをユーザに思い出させる記憶補助として、リストを使用することもできる。

【０００７】印刷ジョブの概要は、システム内の所定の複数のプリンタについてだけでなく、全てのプリンタについても表示させることができる。これは、例えば構成中に設定することができるが、必要な場合には、セットアップ手順で特定のプリンタを選択することによって実施することもできる。

【０００８】

【発明の実施の形態】次に本発明について以下の例示の実施形態および添付の図面に関連して説明する。

【０００９】図１は、ローカルネットワークＮによって接続されたワークステーションＷＳとプリンタＰＲとからなるシステムを示す。ワークステーションは、例えばＰＣであり、各々の場合に処理装置、表示画面、キーボードおよびマウスが備えられる。プリンタは、それぞれスキャナと、プリンタと、オペレータ制御装置と、ネットワークに接続するための接続装置（デジタルアクセスコントローラまたはＤＡＣ）とを含むデジタル複写機であり、ワークステーションから送られた印刷ジョブを処理する。さらに、プリンタ機能しか有しないが、以下で説明する機能性に適した制御システムをも有する機械を使用することが可能である。これら全ての機械、複写機およびプリンタを以下では「プリンタ」と呼ぶ。ワークステーションから特定のデータファイルを印刷させることを希望するユーザは、そのためにシステムのいくつかのプリンタまたは全てのプリンタから選択することができる。

【００１０】プリンタと通信し、それに関する情報をユーザに提示するために、接続された各ワークステーション内で作動するソフトウェアがあり、これを以下では「デスクトップソフトウェア」と呼ぶ。このプログラムは個人化される。すなわち、これは起動時にユーザ自身を識別し、ユーザの許可コードを入力したただ１人のユーザの命令で作動する。

【００１１】デスクトップソフトウェアを以下では略して「デスクトップ」とも呼ぶが、これは、図２のブロック１００に概略的に示すいくつかのサブプログラムから構成される。デスクトップソフトウェアの中核は、「仮想プリンタ」と表示されたサブプログラムによって形成され、これは接続されたプリンタと通信し、ワークステーションユーザにとって重要である限り、これらのプリンタの各々の性質および状態を更新する。以下の記述で説明するように、ユーザは、接続されたプリンタの状態およびそこで処理されるべき印刷ファイルに関して、どれだけの情報をいつ表示させたいかを選択することができる。デスクトップソフトウェアとプリンタとの間でのこれらの問題に関するデータの交換は、ユーザの要件に

とって重要なものに限定される。これにより、ネットワークに必要以上に負荷がかかることがなくなり、さらに、関連情報だけがワークステーション内に存在し、それを処理するだけでよいので、ワークステーションの処理能力に必要以上に負荷がかかることがない。

【００１２】「仮想プリンタ」プログラムは、以下で「ユーザインタフェース」（ＵＩ）と呼ぶオペレータ制御プログラムを備えており、これはユーザとデスクトップソフトウェアとの間の通信をユーザに理解できる方法で、キーボードのキーストロークや表示画面上のウィンドウの形で制御するものであり、そのウィンドウ内には情報が提示され、またユーザがマウスの動きによって要素を選択しその動作を制御することができる。デスクトップソフトウェアはまた、ネットワークを介したプリンタとの間のデータ転送を制御する通信プログラムＣＯＭを備えている。

【００１３】図２のブロック２００に、プリンタのＤＡＣ中の通信ソフトウェアの概略図を示す。これは、具体的には、プリンタ自体およびプリンタで処理中の印刷ジョブに関する状態情報などのデジタル情報をワークステーションとの間で送受するための「情報サーバ」ＩＳによって形成される。情報サーバは、各デスクトップが必要とする情報に関するデータを更新し、本当に必要な情報だけを必要な時に送信する。情報サーバはまた、ネットワークを介したデスクトップとの間のデータ転送を制御するための通信プログラムＣＯＭを備えている。

【００１４】プリンタによって印刷するためにネットワークを介してプリンタに伝送されるデジタルデータのファイルは、第１のタイプまたは第２のタイプのいずれかである。以下で自動印刷ジョブと呼ぶ第１のタイプのファイルは、直接、すなわち、オペレータがプリンタで追加の処置を行うことなく、印刷しなければならないが、以下で対話式印刷ジョブと呼ぶ第２のタイプのファイルは、プリンタメモリに記憶しなければならないだけであり、オペレータがプリンタのところでオペレータ制御手段を使用して選択することによって明示的に要求するまで印刷してはならない。ファイルに付加される属性は、関連するファイルのタイプを示す。

【００１５】第１のタイプのデータファイルの処理を、この記述では自動印刷（ＡＰ）と呼ぶ。

【００１６】第２のタイプのデータファイルの処理を、以下では対話式印刷（ＩＰ）と呼ぶ。この手順は次の通りである。

【００１７】対話式印刷によって印刷するために、ネットワークを介してワークステーションによって伝送されるデータファイルは、ＤＡＣによって受け取られる。これは、所有者の名前およびファイル自体の名前など、いくつかの所定の識別データをファイルから抽出する。次にファイルは変更されずにそのまま、プリンタ内の記憶装置、例えばハードディスクに記憶され、その後機械は

このジョブに関して待機状態に移る。

【００１８】ＤＡＣは、記憶された印刷すべき全てのデータファイルの識別データを含む管理システムを管理する。ネットワークを介して新しいファイルが供給されると、ＤＡＣはその識別データを所有者／送信者の名前で管理システムに追加する。

【００１９】ディスクはＤＡＣの前記管理システムと共に、いわば、データファイルのための一組の「論理記憶空間」を形成し、各論理記憶空間は１人のユーザに割り当てられる。したがって、ユーザの論理記憶空間における記憶とは実際には、ファイルはディスクに記憶され、そのユーザの名前で管理システムに登録されることを意味する。論理記憶空間は、所有者／ユーザに固有のコードによって保護することができる。すなわち、実際問題として、オペレータは、プリンタのオペレータ制御手段を介してこのコードを入力した後でなければ、特定の論理記憶空間に記憶されたファイルの情報を入手することはできない。

【００２０】オペレータがここで特定の対話式印刷ファイルを印刷させたい場合、オペレータはプリンタオペレータ操作盤によってそのファイルを選択し、起動キーを作動させることによって印刷コマンドを与えなければならない。それに応答してデータファイルがディスクから取り出され、印刷可能なデータに変換され、これがプリンタによって処理されてプリントを形成する。対話式印刷ファイルは、送信者がコードによって保護することができる。このコードは、印刷ファイルの属性の形式である。ユーザがこのファイルを対話式に印刷したい場合、ユーザはファイルを印刷する前にオペレータ操作盤からセキュリティコードを打ち込まなければならない。

【００２１】データファイルを対話式に印刷し終わったとき、それは原則的に、ユーザ自身によって、またはプリンタ管理者によって除去されるまで、ディスクに記憶され、かつ管理システムに登録されたままである。

【００２２】プリンタ管理者は、機械を自動印刷ジョブが受け入れられないモードにすることができる。その場合、入力自動印刷ジョブは、プリンタによって対話式印刷ジョブに変換され、ディスクに記憶される。

【００２３】すでに述べた通り、このシステム内の少なくともいくつかのプリンタは事実上デジタル複写機であり、原本を走査し、それによって生成されたデジタル画像データを印刷することによって、原本のコピーを作成することもできる。

【００２４】したがって、機械のユーザ自身によって開始されるジョブ（印刷ジョブおよび対話式印刷ジョブ）および離れた場所から、例えばワークステーション（ＰＣ）から供給されるジョブ（自動印刷ジョブ）がある。前者の場合、プリンタは、オペレータ操作盤からの開始コマンドに応答して複製プロセスを始動するコマンド制御モードで作動するが、後者の場合、プリンタは、自発的に複製プロセスを始動する自律モードで作動する。

【００２５】機械のところでキーによってジョブを始動するためにそこに行ったユーザは、自分のジョブを始動しようとした矢先に遠隔始動された自動印刷ジョブが始まった場合、非常にフラストレーションを覚える。その後、ユーザは自分のコピーを作成できるようになる前に、遠隔始動されたジョブが終了するまで待たなければならず、または少なくとも「割込み」機構によってそのジョブを中断しなければならない。これは、実際には、特に頻繁に使用される機械では頻繁に発生し、結果的に煩わしさや遅れを生じる。

【００２６】機械におけるユーザの立場をできるだけ保護するために、機械におけるオペレータによる物理的相互作用に応答して、機械はコマンド制御モードに移るか、所定の第１の待ち時間だけそのモードのままである。この待ち時間中、機械は自律モードに移ることができない。これは、機械のところで、何らかの対話によって、例えばキーを起動するか、または複数の文書を機械の給紙トレーに配置することによって、ユーザ自身がそのジョブを急がずに始動するのための時間を作る機会をユーザに提供する。

【００２７】さらに、コマンド制御モードでジョブの実行が終了した後、機械は所定の第２の待ち時間だけコマンド制御モードのままである。

【００２８】したがって、ユーザがさらにコピーまたは対話式印刷ジョブを続けたい場合に、自動印刷ジョブに先を越されることがない。また、前記第２の待ち時間中にも、機械は自律モードに移行できない。第２の待ち時間は第１の待ち時間と等しくすることができる。待ち時間の実際の値は、例えば３０秒から２分である。

【００２９】次に、上述のデスクトップソフトウェアについてさらに説明する。

【００３０】デスクトップソフトウェアは、次のモジュールを含む。

【００３１】全ての利用可能な接続されたプリンタの概要とそれらの状態の表示（以下、装置概要と呼ぶ）
現在の印刷ジョブの概要と各ジョブの設定における介入の可能性（以下、ジョブ制御と呼ぶ）
現在の印刷ジョブの進捗に関する情報提示（以下、ジョブ監視と呼ぶ）
デスクトップソフトウェアの３つのモジュールによって提示されるモード情報は動的である。すなわち、提示されたモードに変化があれば、ただちに直接改定される。

【００３２】デスクトップソフトウェアは個人化される、したがって情報の提示および制御の可能性は、１人の特定のユーザの希望に向けられることに再び留意されたい。

【００３３】上述の３つのプログラムモジュールは、ワークステーション表示画面上でデスクトップソフトウェアを選択したときに表示される一般開始メニューから始

動することができ、それについて次に順次説明する。

【００３４】図３は、ユーザがデスクトップソフトウェアで「装置概要（Device Overview）」オプションを選択した後、ワークステーション表示画面上に表示されるウィンドウ１０を示す。このウィンドウは、各プリンタについて、そのプリンタの状態を示す記号を表示する。この例を図３に示す。さらに、各記号にプリンタの短い説明が付いているので、どのプリンタが関係しているかが明瞭である。

【００３５】第１の記号１１は、プリンタの様式化されたイラストである。この記号は、当該のプリンタが印刷ジョブに利用でき、現在遊休状態であることを示す。第２の記号１２はプリンタとその上に重ねられた用紙の山を示しており、この機械が自律モードで自動印刷ジョブに従事していることを示す。記号１３はプリンタとその前にいる人を示しており、その機械がコマンド制御モードであり、したがって印刷ジョブまたは対話式印刷ジョブのいずれかに従事しているか、または上述の第１のまたは第２の待ち時間中であり、この間自動印刷ジョブを始動できないことを示す。記号１４は、プリンタとその上に重ねられた警告板のイラストであり、このプリンタが誤動作状態であることを示す。記号１５は、細部を省いたプリンタのイラストであり、このプリンタは接続されているが、現時点では印刷ジョブや印刷ジョブに利用できないことを示す。

【００３６】これらの記号から、ユーザは自分の印刷ジョブをどのプリンタに転送すべきか、いつ印刷ジョブまたは対話式印刷ジョブを実行したいか、選択した機械が空いているかどうかを判断することができる。「割込み」モードで印刷ジョブまたは対話式ジョブを実行するために、ユーザが機械のところで自動印刷ジョブを作動中に難なく停止することができるが、機械のところで別のユーザをパスするには、より説得力のある理由が必要になるので、使用状態、すなわち自律モードでの使用、コマンド制御モードでの使用の区別表示は特に便利である。

【００３７】ユーザは記号の１つを選択し、したがってプリンタの１つを選択し、次いでウィンドウのトップバーのメニューかポップアップメニュー、またはマウス右ボタンのいずれかにより、以下の機能の１つを呼び出すことができる。

【００３８】関係するプリンタの待機中の印刷ジョブを表示する。この機能では、自動印刷ジョブおよび対話式印刷ジョブが別個に表示され、これらを操作することもできる。この機能は「ジョブ制御」プログラムモジュールの一部分を形成するものであり、そこで詳しく説明する。この機能は、プリンタ記号をマウスでダブルクリックして呼び出すこともできる。

【００３９】関係するプリンタの性質および状態を表示する。

【００４０】作業中に関係するプリンタの状態に関する情報を表示画面上に提示する監視機能を呼び出す。

【００４１】関係するプリンタをデフォルトプリンタと定義する。

【００４２】プリンタの性質と状態が表示される上述の機能では、この情報を含むウィンドウが表示画面上に表示され、情報は、図４Ａ、図４Ｂ、および図４Ｃに示すようにそれらのタブの選択によって見ることができるようになる３つのタブカードに分散される。プリンタトレーの印刷用紙のストックが第１のタブカードに表示され、プリンタの現在の動作状態が第２のタブカードに表示され、インストールされた機能性に関する情報が第３のタブカードに表示される。

【００４３】上述の監視機能の選択に応じて、ワークステーション表示画面上に、ユーザが好みのプリンタ状態データの表示形式を設定できるウィンドウが表示される（図５参照）。主として２通りの表示形式がある。すなわち、画面上の永続的アイコンによる（「アイコンによる」）ものと、プリンタ状態の変化が発生したときに画面上に表示されるメッセージによる（「警告による」）ものである。

【００４４】アイコンによる監視を設定した場合、アイコンは、まさに図３に示すような状態の記号イラストを表示する。そのようなアイコンの例を図６Ａに示す。ユーザはまた、さまざまなプリンタの状態を同時に維持させることもできる。その場合、画面は、図６Ｂに示すように各々の監視されたプリンタのアイコンを表示する。アイコンをマウスでダブルクリックすることにより、関係するプリンタの待機中の印刷ジョブを表示する機能が呼び出される。この点について、再び「ジョブ制御」プログラムモジュールの説明を参照する。

【００４５】監視がメッセージによる場合、ユーザは、メッセージを受け取りたい状態の変化を指示し、したがって不必要なレポートを回避することができる。このタイプのメッセージの例を図７に示す。

【００４６】図８は、ユーザが現在の印刷ジョブの概要を保持するためにデスクトップソフトウェアの「ジョブ制御」オプションを選択した後のワークステーション表示画面の関連レイアウトを示す。

【００４７】ここにいくつかのウィンドウ２０Ａ、２０Ｂ、２０Ｃが表示されるが、各々がその時点でユーザの印刷ジョブが存在するプリンタに該当する。したがって、その時点でユーザの印刷ジョブが存在するプリンタの数と同じ数だけ表示されるウィンドウがある。この機能が「装置概要」モジュールから呼び出された場合には、そこで選択されたプリンタのウィンドウだけが表示される。

【００４８】ウィンドウ２０は、自動印刷ジョブ用の空間２１、ユーザの対話式印刷ジョブ用の空間２２、およびアクティブな印刷ジョブを指定するための空間２３を

含む。また、マウスによって操作できるいくつかの「キー」もある。

【００４９】空間２１には、ユーザの自動印刷ジョブの待ち行列が、それらの状態（待ち行列における番号）、名前、およびセットアップ中にユーザによって選択されるその他のデータと共に含まれる。空間２１の左下のスイッチボックスをクリックすることにより、ユーザは全ての待機中の自動印刷ジョブを、すなわち他のユーザのものを含めて、表示させることもできる。その場合、ユーザ自身のジョブは、その他と区別できるような方法で、例えば色付きで再生される。ジョブ制御モジュールが特定のプリンタの「装置概要」モジュールから呼び出された場合、全ての待機中の自動印刷ジョブの、すなわち他のユーザのものを含む表示は、デフォルト設定である。

【００５０】空間２２には、ここではジョブの性質に対応する名前を伴うアイコンにより再生された、ユーザの待機中の対話式印刷ジョブの概要が含まれる。これらは待ち行列に入っておらず、ユーザがオペレータ操作盤で始動するまで実行されない。これらのジョブに関するより多くの情報を得るために、ユーザはそれらを詳細リストに表示させることもできる。

【００５１】空間２３は、その時点でアクティブな印刷ジョブのデータ、またはアクティブなジョブがない場合にはプリンタの状態（「遊休」、「エラー」）を表示する。この空間には次のデータ、すなわちジョブのタイプ（印刷ジョブ、自動印刷ジョブ、対話式印刷ジョブ）、プリントの枚数、ジョブの所有者の名前、およびジョブの名前が含まれる。空間２３の横にキー２４があり、これによりアクティブなジョブを中断することができる（「打切り」）。

【００５２】キー２５により、空間２２で選択した対話式印刷ジョブを自動印刷ジョブに変換し、空間２１の待ち行列に加えることができ、キー２６は、空間２１で選択した自動印刷ジョブを対話式ジョブに変換し、それを空間２２に移動することができる。

【００５３】キー２７により、空間２１または２２のいずれかで選択した印刷ジョブの印刷設定を表示することができる。同じ効果は、ジョブ名をマウスでダブルクリックすることによっても達成される。これに応答して、ワークステーション表示画面上にウィンドウが開き、全ての設定を表示する。設定をこのウィンドウで変更することもできる。

【００５４】最後に、空間２１または２２のいずれかで選択した印刷ジョブを、キー２８によって除去することができる。

【００５５】上記の機能は、ジョブを選択し、かつウィンドウ２０の上部のメニューバーの「文書（document）」メニューから選択することによって、またはジョブ名をマウス右ボタンでクリックしたときに現れるポップメニューで選択することによって呼び出すこともできる。

【００５６】キー２４～２８に関連して説明した機能は、ユーザが自分自身の印刷ジョブに対してのみ使用することができる。

【００５７】ウィンドウ２０の上部のメニューバーの「表示（View）」メニューは、次のオプションを提供する。

【００５８】自動印刷ジョブの表示形式の選択（表示する情報の選択）

対話式印刷ジョブの表示形式の選択（アイコンかリストか、およびリストを選択した場合、どの情報を表示するか）

（全てのプリンタにおける）ユーザの全ての印刷ジョブ、ジョブが存在するプリンタ、およびすでに終了した印刷ジョブに関するこの情報の表示

この最後の機能について、図９を参照しながら次に説明する。

【００５９】この機能を選択すると、ワークステーション表示画面上にウィンドウ３０が表示される。このウィンドウ３０は、全てのプリンタでまだ終了していない関係するユーザの全ての印刷ジョブのリストが、それらの状態（待機中、使用中、エラー）およびそれらが存在するプリンタと共に表示される空間３１を含む。このリストは、自動印刷ジョブおよび対話式印刷ジョブの両方およびそれらのタイプを示す。空間３１の印刷ジョブの名前をマウスでダブルクリックすると、そのジョブが存在するプリンタのジョブ制御ウィンドウ（図８）が開くので、ユーザは待ち行列内のジョブの状態（それが自動印刷ジョブの場合）を見ることができ、ジョブを操作することができ、印刷設定を点検および／または変更することができる。

【００６０】ウィンドウ３０はまた、全てのプリンタで終了した関係するユーザの全ての印刷ジョブのリストを、それを処理したプリンタと共に表示する空間３２をも含む。キー３３が空間３２の下に設けられており、ユーザはマウスをクリックすることによってこれを選択した後、リストから印刷ジョブを除去することができる。

【００６１】空間３１または３２の空間のリストが長すぎて、その空間に収まりきれない場合には、スクロールバーが表れ、それによりウィンドウに収まりきれないジョブにたどり着くことができる。

【００６２】空間３２の終了した印刷ジョブのリストは、状態の指示も表示することができるが、これはここには示されていない。２つ以上の供給トレーを備えたプリンタの場合、プリンタの機械制御システムはプリントが置かれた供給トレーを知っており、この情報はリストに表示することができる。プリンタはまた、供給トレーにプリントがあるかどうかを決定するセンサをも備えることができる。この場合、機械制御システムは、供給さ

れたプリントの積重ねがトレーから取り出されると、それを知ることもできる。この情報も、空間３２のリストに表示することができる。この状態情報は、「供給トレーXに存在する」または「取り出された」の形式を取ることができる。

【００６３】この機能により、ユーザは自分の印刷ジョブが待ち行列のどこにあるか、あるいは自分のプリントがどこに置かれているかを常に知ることができ、これは、特にいくつかのプリンタが使用される環境では極めて便利である。

【００６４】監視機能はまた、システム内の全プリンタの指定された部分集合についてだけ作動することもできる。これは、システムを構成するときに、またはプログラムのセットアップ機能により設定することができる。

【００６５】ジョブ制御ウィンドウ２０の上部のメニューバーの「監視（monitor）」メニューは、関係するプリンタにおける関係するユーザの印刷ジョブの監視機能を起動させる機会を提供する。この機能は、デスクトップソフトウェアの開始メニューから呼び出すこともでき、以下で説明する。

【００６６】監視機能は、ユーザに自分の自動印刷ジョブの状態について知らせ続けるためのものである。これは全ての現在のジョブ、またはユーザによって選択されたジョブの一部に対して機能することができる。

【００６７】監視機能には次の３つのモードがある。

【００６８】第１のモード（「アクティブ」）：集合のうち終了していないジョブがまだ少なくとも１つある。まだ終了していないジョブの数も含まれる。

【００６９】第２のモード（「パッシブ」）：集合の全てのジョブが終了したか、または集合が空である。

【００７０】第３のモード（「エラー」）：ジョブの１つがエラーを引き起こした。

【００７１】デスクトップソフトウェアの開始メニューの監視機能の選択に応答して、ワークステーション表示画面上に、ユーザが監視機能に１つ、複数または全部のプリンタを選択できるウィンドウが表示される。これを図１０に示す。ユーザが「ＯＫ」をマウスでクリックした後、ワークステーション表示画面上に、ユーザが自分の個人用印刷ジョブの状態の表示形式の好みを設定できるウィンドウが表示される（図１１参照）。表示形式は主として２通りある。すなわち、画面上の永続的アイコンによる（「アイコンによる」）ものと、その状態に変化があったときに画面上に現れるメッセージによる（「警告による」）ものである。後者の場合、ユーザはメッセージを受け取りたい状態の変化を指示し、それにより不必要なレポートを避けることができる。

【００７２】ユーザが好みを入力し、「ＯＫ」キーを押すと、その後、機能が起動する。アイコンモードを選択した場合、ここでアイコンが表示画面上に表示される。

【００７３】ジョブ監視をジョブ制御から起動すると、

図１０の選択ウィンドウは省かれ（ジョブ制御ウィンドウのプリンタは自動的に選択される）、すぐに図１１のウィンドウが表示される。

【００７４】図１２は監視アイコンを示す。それがアクティブになっているプリンタの名前の他に、アイコンは、そのプリンタにおけるユーザの印刷ジョブの集合の状態を示す記号を含む。この例では、上述の３つの状態に対して、次の記号が表示される。

【００７５】第１の状態（「アクティブ」）の場合：文書とペンのイラスト

第２の状態（「パッシブ」）の場合：文書のイラスト

第３の状態（「エラー」）の場合：文書の前の警告板

監視機能によって監視される印刷ジョブの上記集合は、関係するプリンタにおけるジョブの完全な集合とすることができるが、別法として部分集合とすることもできる。この部分集合は、ジョブ制御ウィンドウ２０の空間２１で、必要な印刷ジョブをマウスでクリックした後、メニューバーの監視メニューをクリックすることによってのみ選択することができる。ジョブ監視機能がデスクトップソフトウェアの開始メニューから呼び出される場合、集合は常に全てのジョブを含む。監視機能は動的である。すなわち、印刷ジョブを監視される集合に追加することができる。

【００７６】監視アイコン上でのマウスのダブルクリックに応答して、関係するプリンタのジョブ制御ウィンドウが開くので、ユーザは自分のジョブの完全な状態を点検することができる。

【００７７】複数のアイコンを同時に表示画面上に表示することもできるので、ユーザはさまざまな集合またはプリンタの状態を同時に点検することができる。

【００７８】「警告による」モードが選択された場合、集合からの印刷ジョブの状態のユーザによって選択された変化があった場合のみ、メッセージウィンドウが現れる。そのようなウィンドウの一例を図１３に示す。

【００７９】上述の実施形態では、デスクトップソフトウェアはワークステーションに前もって記憶される。変形形態では、デスクトップソフトウェアはフロッピーディスクやＣＤ－ＲＯＭディスクなど記憶媒体に記憶され、その場合ユーザがデスクトップソフトウェアを情報処理システムのワークステーションにインストールできるように記憶媒体はユーザに供給される。

【００８０】他の実施形態では、デスクトップソフトウェアは情報処理システムのワークステーションにインストールできるようにインターネットその他のネットワークを介して伝送される。

【００８１】以上、本発明について上記の例示の実施形態に関連して説明したが、請求の範囲の文言の範囲内で他の実施形態が可能であることは当業者には明白であろう。それらは本特許の保護の範囲内に含まれるものとする。

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【図面の簡単な説明】

【図１】本発明が位置する情報処理システムを示す図である。

【図２】本発明によるソフトウェアの概略図である。

【図３】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図４Ａ】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図４Ｂ】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図４Ｃ】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図５】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図６Ａ】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図６Ｂ】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図７】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

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【図８】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図９】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図１０】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図１１】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図１２】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【図１３】本発明によるソフトウェアによってワークステーション表示画面上に表示される情報ウィンドウを示す図である。

【符号の説明】

ＡＰ　自動印刷
ＣＯＭ　通信プログラム
ＤＡＣ　デジタルアクセスコントローラ
ＩＰ　対話式印刷
Ｎ　ローカルネットワーク
ＰＲ　プリンタ
ＵＩ　ユーザインタフェース
ＷＳ　ワークステーション

【図１】

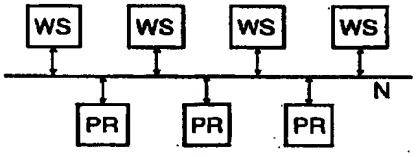

FIG. 1

【図２】

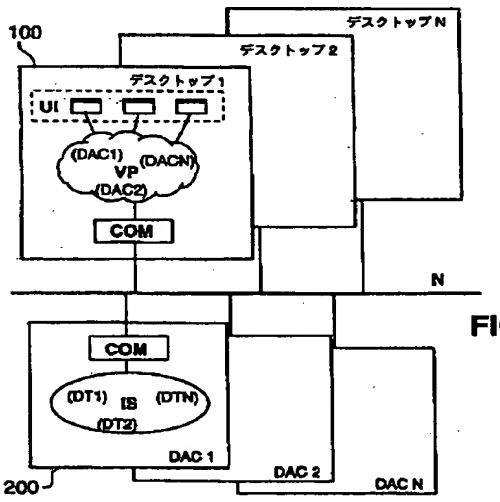

FIG. 2

【図６Ａ】

Fig. 6A

【図３】

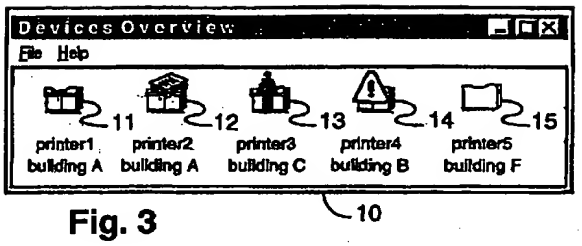

Fig. 3

【図７】

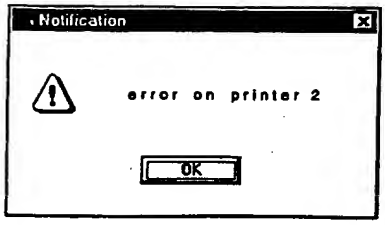

Fig. 7

【図４Ａ】

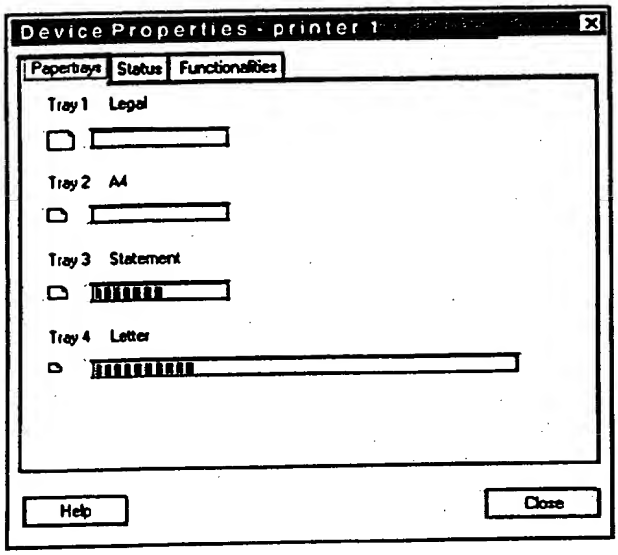

FIG. 4A

【図１３】

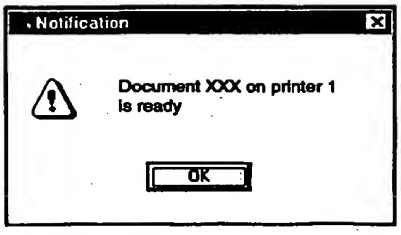

Fig. 13

【図４Ｂ】

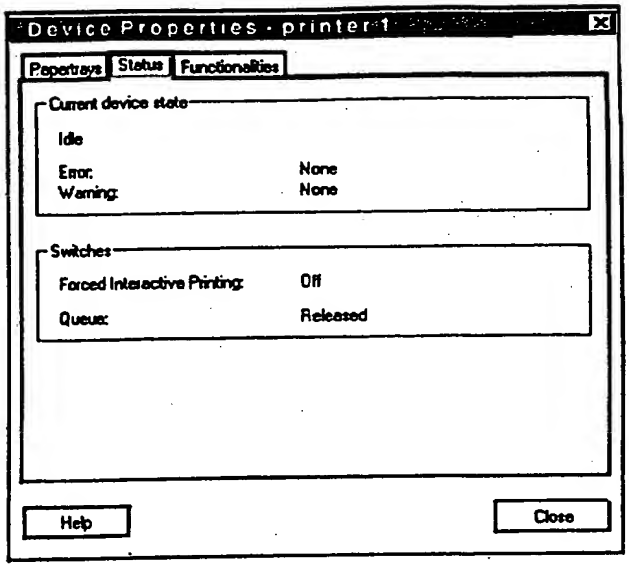

FIG. 4B

【図４Ｃ】

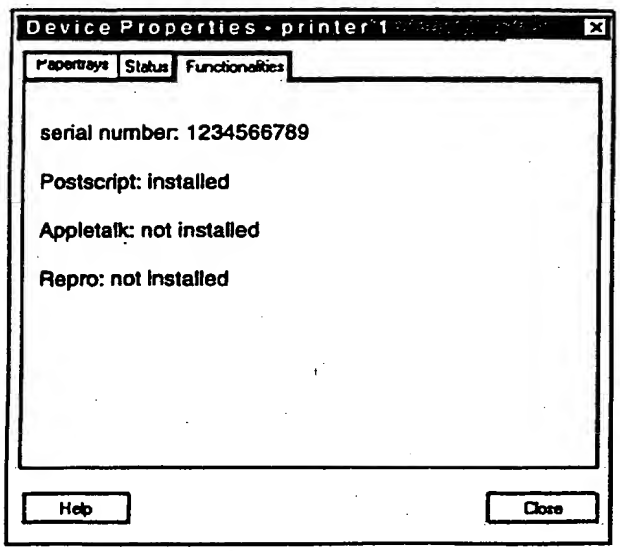

Fig. 4C

【図５】

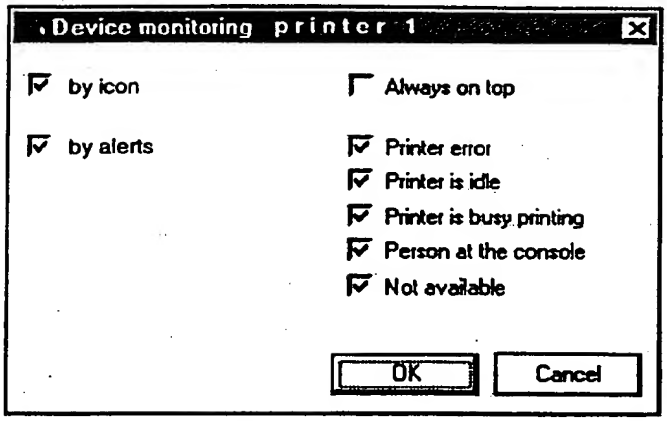

Fig. 5

【図１２】

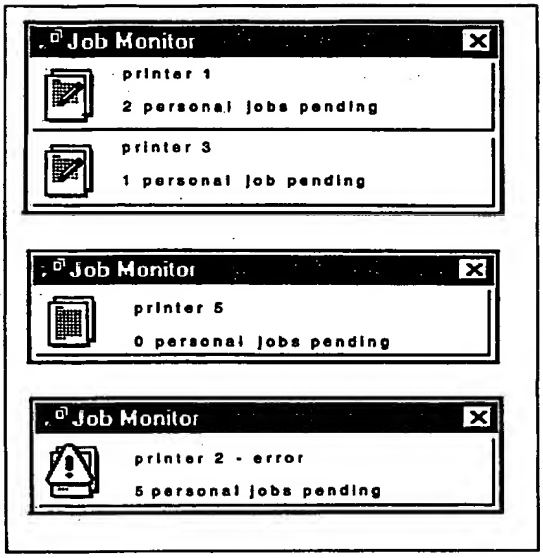

Fig. 12

【図６Ｂ】

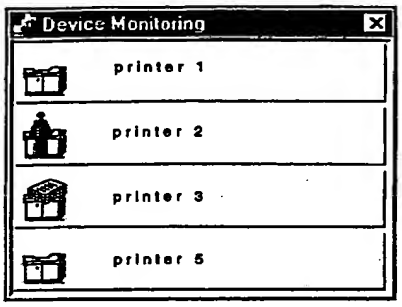

Fig. 6B

【図１０】

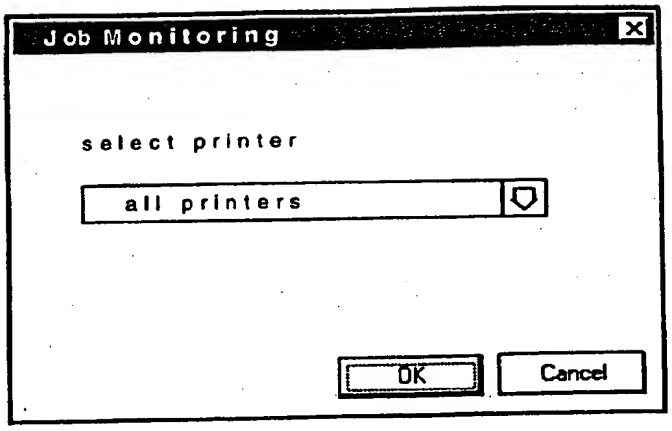

Fig. 10

【図８】

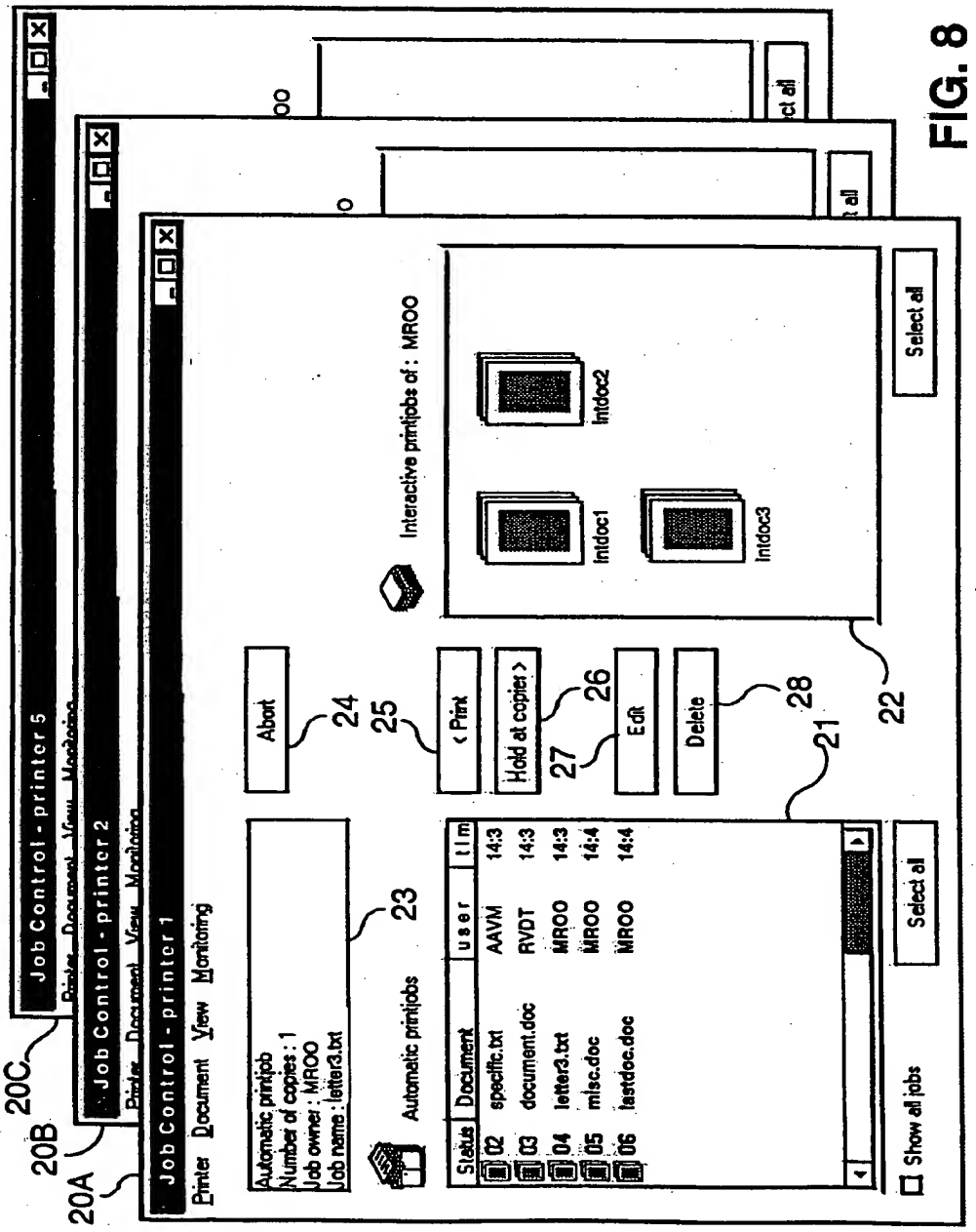
Job Control - printer 5
Job Control - printer 2
Job Control - printer 1
Printer Document View Monitoring
20C
20B
20A
Automatic printjob
Number of copies : 1
Job owner : MROO
Job name : letter3.txt
23
Automatic printjobs
Abort
24
< Print
25
Hold at copier >
26
27
Edit
Delete
28
21
Interactive printjobs of : MROO
Initdoc2
Initdoc1
Initdoc3
22
Select all
Status
Document
user
tim
02 specific.txt AAVM 14:3
03 document.doc RVDT 14:3
04 letter3.txt MROO 14:3
05 misc.doc MROO 14:4
06 lastdoc.doc MROO 14:4
Select all
Show all jobs

FIG. 8

【図９】

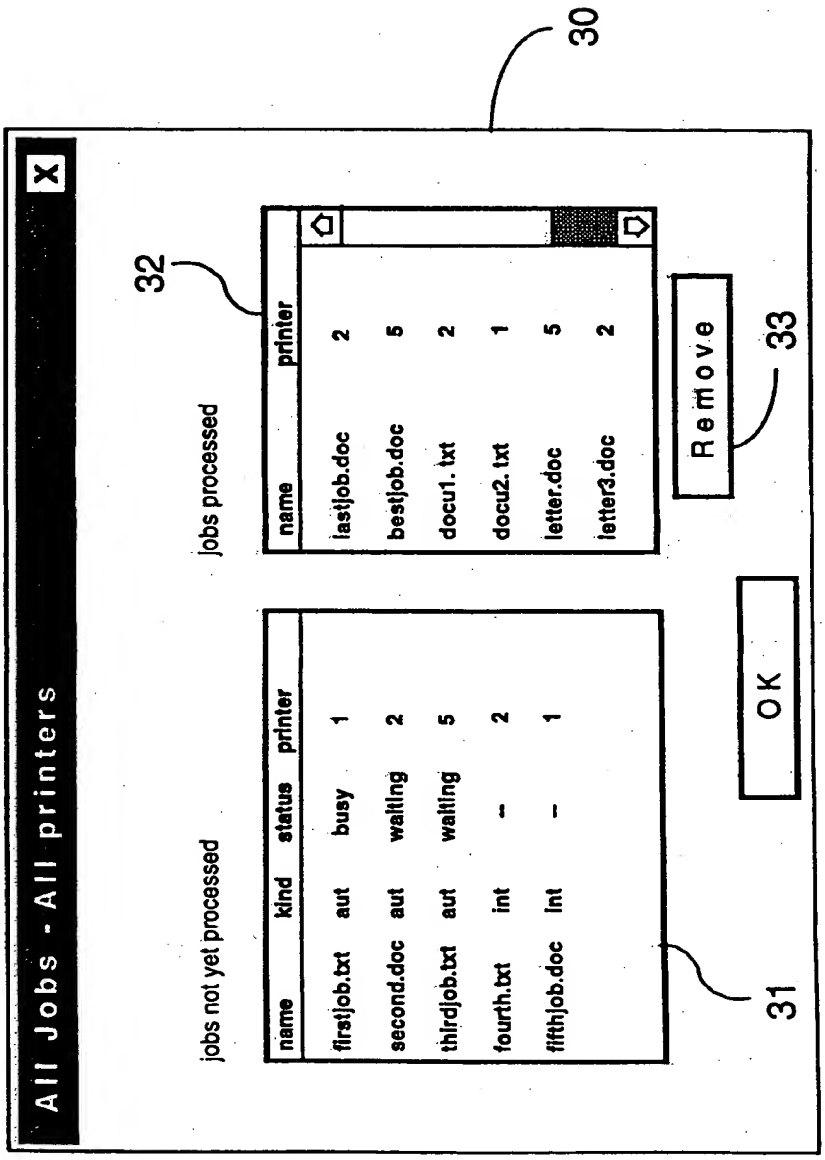
30
All Jobs - All printers
X
32
jobs processed
name printer
lastjob.doc 2
bestjob.doc 5
docu1. txt 2
docu2. txt 1
letter.doc 5
letter3.doc 2
Remove
33
jobs not yet processed
name kind status printer
firstjob.txt aut busy 1
second.doc aut waiting 2
thirdjob.txt aut waiting 5
fourth.txt int – 2
fifthjob.doc int – 1
OK
31

Fig. 9

【図１１】

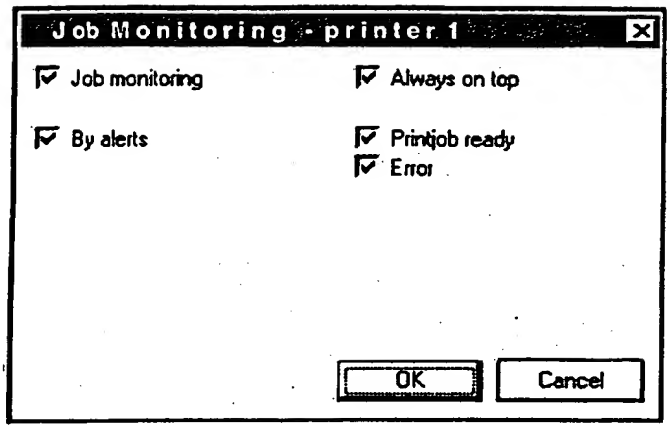

Fig. 11

フロントページの続き

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【外国語明細書】

1. Title of Invention

User interface for an information-processing system

2. Claims

1. An information processing system comprising:

at least one workstation provided with a processor unit, a screen, and operator-control means such as a keyboard and mouse,

a number of printers, each provided with a control unit, and

a digital network to which the workstations and printers are connected,

wherein a workstation is provided with a program personalised for a specific user for communication with a printer for sending print jobs to said printer and calling up or receiving status information from said printer,

which program comprises means for:

- collecting information concerning the status of print jobs of the said user at a predetermined plurality of printers,

- updating an actualised overview of the print jobs of the said user, and

- presenting at the workstation screen the actualised overview of print jobs of the said user, including, for each print job, at least an identification of the printer to which that print job has been sent.

2. A system according to claim 1,
wherein the said program separately presents on the workstation screen print jobs which have already been finished.

3. A system according to claim 1,
wherein the said program presents at the workstation screen print jobs which have not yet been finished together with information as to their current status.

4. A system according to claim 1 or 2,
wherein the said program is provided with means whereby print jobs which have already been finished can be removed from the presented overview at a command by the user, given with the operator control means for a specified print job.

5. A system according to claim 1,
wherein the said predetermined plurality of printers comprises all the connected printers.

6.A computer-readable storage medium haing a program recorded thereon, which is used for an information processing system comprising:

at least one workstation provided with a processor unit, a screen, and operator-control means such as a keyboard and mouse,

a number of printers, each provided with a control unit, and

a digital network to which the workstations and printers are connected;

where the program is to make the workstations operate as

means, personalized for a specific user, for collecting information concerning the status of print jobs of the said user at a predetermined plurality of printers,

means for updating an actualised overview of the print jobs of the said user, and

means for presenting at the workstation screen the actualised overview of print jobs of the said user, including, for each print job, at least an identification of the printer to which that print job has been sent,

in order to communicate with a printer for sending print jobs to said printer and calling up or receiving status information from said printer.

3. Detailed Description of Invention

The invention relates to an information-processing system comprising at least one workstation for a user and a number of printers on which print files made at a workstation can be printed.

When a system of this kind is in use, it is frequently difficult for a user to remember the printer to which he has sent a specific print file. One possibility of finding a print job is inspection of the separate print queues, but this is a time-consuming task. In addition, print jobs which have been finished disappear from the print queue and then can no longer be found at all. The user then has no alternative but to look at each printer to see whether his prints happen to be present there.

The invention meets the described need for information by the fact that the program operative in the workstation for communication with the printers comprises means for

- collecting information concerning the status of print jobs of the said user at a predetermined plurality of printers,
- updating an actualised overview of the print jobs of the said user, and
- presenting at the workstation screen the actualised overview of print jobs of the said user, including, for each print job, at least an identification of the printer to which that print job has been sent.

In this way the user can rapidly obtain an overview of all his outstanding print jobs and the printer to which they have been sent, even if they have already been finished.

In one embodiment of the invention the current status is given for print jobs which have not yet been finished. This can be in the following form: "waiting, in progress, has caused an error", or their serial number in their print queue. A status can also be given for print jobs which have already been finished. In that case the status will, for example, be in the form of the delivery tray in which prints have been placed, or "removed" if the printer with means known per se suitable for the purpose has detected that the delivery tray in which the prints were deposited has been emptied.

In a further embodiment, finished print jobs are not removed from the overview until the user selects them and gives them a removal command. This has advantages

over automatic removal after a specific time. In this way the user can also use the list as a memory aid to remind him that he must fetch the prints of a specific job.

The overview of print jobs can be presented for a predetermined plurality of printers in the system, but also for all the printers. This can be set, for example, during configuration, but if required it can also be effected by selecting specific printers in a set-up procedure.

The invention will now be explained by reference to the following exemplified embodiment and the accompanying drawings.

Fig. 1 shows a system of workstations WS and printers PR connected by a local network N. The workstations are, for example, PC's and are in each case equipped with a processing unit, a screen, a keyboard and a mouse. The printers are digital copying machines, each comprising a scanner, a printer, an operator control unit and a connection unit (Digital Access Controller or DAC) for connection to the network and processing print jobs sent from the workstations. In addition it is possible to use machines which only have a printer function but also have a control system adapted to the functionality described hereinafter. All these machines, copying machines and printers, are hereinafter referred to as "printer". Users wishing to have a specific data file printed from their workstation, can for the purpose choose from a number of, or even all, the printers of the system.

For the purpose of communication with the printers and the presentation of information relating thereto to the users, there is operative in each connected workstation a program which is hereinafter referred to as "desktop software". This program is personalised, i.e., it works on the instructions of just one user who on starting up has identified himself and input his authorisation code.

The desktop software, hereinafter also referred to as "desktop" for short, is built up from a number of sub-programs diagrammatically illustrated in block 100 in Fig. 2. The core of the desktop software is formed by a sub-program indicated by "virtual printer", which communicates with the connected printers and updates the properties and status of each of these insofar as this is of interest to the workstation user. As will be explained in the following description, a user can choose how much information he

wants to have presented concerning the state of connected printers and the printing files to be processed thereon and at what time. The exchange of data concerning these matters between the desktop software and the printers is limited to what is essential for the user's requirements. This prevents the network from being loaded more than is necessary and in addition the processing capacity of the workstation is not loaded more than necessary, since only the relevant information is present in the workstation and has to be processed.

The "virtual printer" program is provided with an operator control program, hereinafter referred to as "user interface" (UI), which controls the communication between the user and the desktop software in a manner understandable to the user, in the form of key strokes on the keyboard and windows on the screen, in which windows information is presented and in which the user can select and control the operation of elements by means of mouse movements. The desktop software is also provided with a communication program COM for controlling data transport from and to the printers via the network.

Block 200 in Fig. 2 gives a diagrammatic illustration of the communication software in the DACs of the printers. This is formed particularly by an "information server" IS, which is intended to receive from and send to workstations digital information such as status information concerning the printer itself and the print jobs that the printer is processing. The information server updates data concerning the information required by each desktop and transmits only that information which is really required, and at the time at which it is required. The information server is also provided with a communication program COM for controlling data transport from and to the desktops via the network.

Files of digital data which are transmitted to a printer via the network for printing by the printer are either of a first or a second type. Files of the first type, hereinafter referred to as automatic print jobs, are required to be printed directly, i.e. without further action by an operator at the printer, while files of the second type, hereinafter referred to as interactive print jobs, must only be stored in the printer memory and must not be printed until an operator at the printer explicitly so requests there by selection with the aid of the operator control means. An attribute added to the file shows the type of file involved.

Processing of a data file of the first type is referred to in this description as automatic printing (AP).

Processing of a data file of the second type is hereinafter referred to as interactive printing (IP). The procedure with this is as follows.

A data file for printing by interactive printing and transmitted by a workstation via the network is received by the DAC. This extracts from the file a number of predetermined identification data, such as the name of the owner and the name of the file itself. The file is then stored unchanged on a storage unit, e.g. a hard disk, in the printer, whereafter the machine passes to the stand-by state in respect of this job.

The DAC manages an administration system containing the identification data of all the data files for printing which are stored. If a new file is supplied via the network, the DAC adds the identification data thereof in the name of the owner/sender to the administration system.

The disk together with the said administration system of the DAC form, as it were, a set of "logic storage spaces" for data files, each logic storage space being allocated to one user. Thus in actual fact storage in a user's logic storage space means that the file is stored on the disk and registered in the administration system in the name of that user. A logic storage space can be protected by a code specific to the owner/user, i.e. in practice an operator can obtain information over the files stored in a specific logic storage space only after he has input this code via the operator control means of the printer.

If an operator now wishes to have a specific interactive print file printed, then he must select that file by means of the printer operator control panel and give a print command by actuating a start key. In response thereto the data file is brought up from the disk and converted to printable data, which are processed by the printer to form a print. An interactive print file can be protected by the sender by means of a code. This code is in the form of an attribute to the print file. If a user wishes to print this file interactively, he must key in the security code at the operator control panel before the file is printed.

When a data file has been interactively printed, it remains in principle stored on the disk and registered in the administration system until it is removed by the user himself or by the printer manager.

The printer manager can bring the machine into a mode in which automatic print jobs are not accepted. In that case, incoming automatic print jobs are converted by the printer into interactive print jobs and stored on the disk.

As already stated, at least a number of the printers in this system are in fact

digital copying machines, which can also make a copy of an original document by scanning it and printing the digital image data generated thereby.

There are therefore jobs which are started by a user at the machine itself (copy jobs and interactive print jobs) and jobs which are fed from a distance, e.g. from a workstation (PC) (an automatic print job). In the former case, the printer operates in a command-controlled mode in which the machine starts a reproduction process in response to a start command from the operator control panel, while in the latter case it operates in an autonomous mode in which the machine starts a reproduction process on its own initiative.

A user who has gone to the machine in order to start a job there by means of the keys finds it very frustrating if a remote-started automatic print job begins just before he wants to start his job. He then has to wait until the remote-started job is finished, or he must at least interrupt that job by means of an "interrupt" mechanism, before he can make his copy. This frequently occurs in practice, particularly at a machine which is frequently used, and results in annoyance and delay.

In order to protect the position of the user at the machine as much as possible, the machine passes into the command-controlled mode in response to a physical interaction by an operator at the machine, and/or remains there for a predetermined first waiting period. During this waiting period, the machine cannot pass into the autonomous mode. This offers the user at the machine the opportunity of creating, by any interaction, e.g. by actuating a key or placing one or more documents in the machine feed tray, time for himself in order to start his job unhurriedly.

In addition, on completion of the execution of a job in the command-controlled mode, the machine remains in the command-controlled mode for a predetermined second waiting time.

Thus if the user wishes to process further copying or interactive print jobs, he will not be overtaken by an automatic print job. Also during the said second waiting period, the machine cannot pass to the autonomous mode. The second waiting period can be equal to the first. A practical value for waiting periods is, for example, 30 seconds to 2 minutes.

The above-mentioned desktop software will now be described further.

The desktop software comprises the following modules:

- An overview of all available connected printers with an indication of their status

(hereinafter referred to as: Devices Overview)

- An overview of current print jobs with the possibility of intervening in the settings for each job (hereinafter referred to as: Job Control)
- Information provision concerning the progress of current print jobs (hereinafter referred to as: Job Monitoring).

The mode information presented by the three modules of the desktop software is dynamic, i.e. it is adapted directly as soon as there is any change in the presented mode.

It should again be noted that the desktop software is personalised and that the information provision and control possibilities are therefore directed towards the wishes of one specific user.

The three program modules referred to can be started from a general start menu which appears when the desktop software is selected on the workstation screen, and will now be described in sequence.

Fig. 3 shows a window 10 which is displayed on the workstation screen after the user has selected the option "Devices Overview" in the desktop software. This window displays for each printer a symbol indicating the status of that printer. Examples of this are shown in Fig. 3. In addition, each symbol has a short description of the printer so that it is clear which printer is involved.

A first symbol 11 is a stylised illustration of the printer. This symbol indicates that the printer in question is available for print jobs and is at the moment idle. A second symbol 12 shows the printer with a stack of papers over it and indicates that this machine is occupied with an automatic print job in the autonomous mode. Symbol 13 shows the printer with a person in front of it, to indicate that the machine is in the command-controlled mode and hence either occupied with a copy job or an interactive print job or is in the above-described first or second waiting period, in which no automatic print jobs can start. Symbol 14 is an illustration of the printer with, superimposed thereon, a notice board indicating that this printer is in a malfunction state. Symbol 15 is an undetailed illustration of the printer to indicate that this printer is connected but at the present time is not available for copy jobs or print jobs.

From these symbols a user can determine which printer he should send his print job to, and also, when he wishes to carry out a copying or interactive print job, whether the chosen machine is free. Particularly convenient is the differentiated indication of the occupied state, i.e. occupation in the autonomous mode and occupation in the

command-controlled mode, because an automatic print job can without difficulty be stopped during operation by a user at the machine, in order to carry out a copy job or interactive print job in an "interrupt" mode, but passing another user at the machine will always require more convincing reasons.

The user can select one of the symbols, and hence one of the printers, and then call up one of the following functions either with a menu in the top bar of the window or with a pop-up menu or the right-hand mouse button:

- Displaying the waiting print jobs for the printer concerned; in this function automatic and interactive print jobs are displayed separately and they can also be manipulated. This function forms part of the "Job Control" program module and will be described in detail there. This function can also be called up with a double mouse click on the printer symbol.
- Displaying the properties and status of the printer concerned.
- Calling up a monitor function which during the work gives information on the display screen concerning the status of the printer concerned.
- Defining the printer concerned as the default printer.

In the above-mentioned function in which the properties and status of the printer are displayed, a window with this information appears on the screen, the information being distributed over three tab cards which can be made visible by selection of their tab, as shown in Figs. 4A, B and C. The stock of printing paper in the printer trays is displayed on a first tab card, the current state of operation of the printer is described on the second tab card and information as to the installed functionality is shown on the third tab card.

In response to selection of the above-mentioned monitor function, the workstation screen shows a window in which the user can set his preferences for the form of presentation of the printer status data (see Fig. 5). There are two main forms of presentation, namely with a permanent icon on the screen ("by icon") and with messages which appear on the screen at the time that a change of printer status occurs ("by alerts").

When monitoring with icons is set, the icon displays a symbolic illustration of the status just as shown in Fig. 3. An example of such an icon is given in Fig. 6A. A user can also simultaneously have the status of different printers maintained. In that case, the screen shows an icon for each monitored printer as shown in Fig. 6B. By a double click of the mouse on an icon the function of displaying the waiting print jobs for the

printer concerned is called up. In this connection we would again refer to the description of the "Job Control" program module.

When monitoring is by means of messages, the user can indicate the changes of state for which he wants to receive a message, in order thus to avoid unnecessary reports. An example of a message of this kind is displayed in Fig. 7.

Fig. 8 shows the relevant layout of the workstation screen after the user has selected the "Job Control" option in the desktop software to maintain an overview of current print jobs.

Here a number of windows 20A, B and C are displayed, each applicable to a printer at which a print job of the user is present at that time. Thus there are as many windows displayed as there are printers at which the user's print jobs are present at that time. If this function was called up from the "Device Overview" module, then only the window for the printer selected there would be displayed.

A window 20 contains a space 21 for automatic print jobs, a space 22 for interactive print jobs of the user, and a space 23 for specifying the active print job. There are also a number of "keys" which can be operated by means of the mouse.

Space 21 contains the queue of automatic print jobs of the user, with their status (number in the queue), name, and other data to be selected by the user during set-up. By clicking on a switchbox on the left beneath the space 21 the user can also have displayed all the waiting automatic print jobs, i.e. including those of other users. In that case his own jobs are reproduced in a manner which is distinguishable from the others, for example in colour. If the Job Control module is called up from the "Devices Overview" module, for a specific printer, the presentation of all the waiting automatic print jobs, i.e. including those of other users, is the default setting.

Space 22 contains an overview of waiting interactive print jobs of the user, here reproduced with icons with a name, which corresponds to the character of the jobs, which are not in a queue but do not become operative until the user starts them on the operator control panel. To obtain more information concerning these jobs, the user can also have them presented in a detailed list.

Space 23 displays the data of the print job which is active at that time, or, if there is no job active, the state of the printer ("idle", "error"). The space contains the following data: type of job (copying job, automatic print job, interactive print job), number of prints, name of the owner of the job, and the name of the job. Next to the space 23 is a key 24, by means of which the active job can be discontinued ("abort").

By means of the key 25, an interactive print job selected in the space 22 can be converted to an automatic print job and be added to the queue in space 21, while the key 26 can convert an automatic print job selected in space 21 into an interactive job and move it to space 22.

By means of key 27, the print settings can be displayed for a print job selected in either of the spaces 21 or 22. The same effect is achieved by double clicking of the mouse on the job name. In response to this, a window is opened on the screen of the workstation, displaying all the settings. The settings can also be changed in this window.

Finally, a print job selected in either of the spaces 21 or 22 can be removed by means of key 28.

The above functions can also be called up by selecting a job and choosing from the "document" menu in the menu bar above the window 20 or by selecting in a pop-menu which appears when the right-hand mouse button is clicked on a job name.

The functions explained with reference to the keys 24 - 28 can be used by the user only for his own print jobs.

The "View" menu in the menu bar above the window 20 offers the following options:

- Selection of the form of presentation of automatic print jobs (choice of which information is displayed)
- Selection of the form of presentation of interactive print jobs (as icons or in a list and, if a list is chosen, what information is displayed)
- Display of all print jobs of the user (over all the printers), with the printer on which the job is present, plus this information concerning the print jobs that have already been finished.

This latter function will now be explained with reference to Fig. 9.

When this function is selected, the screen at the workstation displays the window 30. This window 30 contains a space 31 in which there is displayed a list of all the print jobs which have not yet been finished for the user concerned, on all the printers, with their status (waiting, busy, error) and the printer at which they are present. This list shows both automatic and interactive print jobs and their type. Double clicking of the mouse on the name of a print job in space 31 opens the Job Control window (Fig. 8) of the printer where the job is present, so that the user can see the status of the job in the queue (if it is an automatic print job), can manipulate the job, and can inspect and/or

change the print settings.

The window 30 also contains a space 32 displaying a list of all the finished print jobs of the user concerned, on all the printers, with the printer which processed them. A key 33 is provided beneath the space 32 to enable the user to remove from the list a print job after he has selected this by clicking with the mouse.

If a list is too long in space 31 or 32 to fit in that space, a scroll bar appears by means of which the jobs not fitting in the window can still be reached.

The list of finished print jobs in space 32 can also give a status indication although this is not shown here. In the case of a printer with more than one delivery tray, the printer machine control system knows the delivery tray in which the prints have been deposited and this information can be displayed in the list. The printer can also be provided with sensors to determine whether there are prints in the delivery trays. In that case, the machine control system can also note that a delivered stack of prints is taken from the tray. This information can also be displayed in the list in space 32. The status information can have the form of: "present in delivery tray X", or "removed".

By means of this function a user can always find out where his print jobs are in the queue or where his prints are situated, this being extremely convenient particularly in an environment in which a number of printers are used.

The monitor function can also operate for just a specified sub-set of all the printers in the system. This can be set when the system is configured, or by means of a set-up function of the program.

The "monitor" menu in the menu bar above the Job Control window 20 offers the opportunity of activating a monitor function for the print jobs of the user concerned on the printer concerned. This function can also be called up from the start menu of the desktop software and will be described hereinafter.

The monitor function is intended to keep the user informed as to the status of his automatic print jobs. It can be operative for all the current jobs or for some of the jobs, as selected by the user.

The monitor function has three modes:

- A first mode ("active"): there is still at least one job of the set which has not been completed; also included is the number of jobs that have not yet been finished.
- A second mode ("passive"): all the jobs of the set have been finished or the set is empty.

- A third mode ("error"): one of the jobs has caused an error.

In response to the selection of the monitor function in the start menu of the desktop software, the workstation display screen displays a window in which the user can select one, more, or all the printers for the monitor function. This is shown in Fig. 10. After the user has clicked the "OK" key with the mouse, the workstation display screen displays a window in which the user can set his preferences for the form of presentation of the status of his personal print jobs (see Fig. 11). There are two main forms of the presentation, namely by means of a permanent icon on the screen ("by icon") or by means of messages which appear on the screen when there is any change in that status ("by alerts"). In the latter case the user can indicate the changes of status for which he wants to receive a message in order thus to avoid unnecessary reports.

The user inputs his preferences and presses the "OK" key, whereafter the function is activated. An icon now appears on the screen if the icon mode was selected.

When Job Monitoring is activated from Job Control, the selection window of Fig. 10 is skipped (the printer of the Job Control window is automatically selected), but the window of Fig. 11 is immediately displayed.

Fig. 12 shows monitor icons. In addition to the name of the printer for which it is active, an icon contains a symbol showing the status of a set of print jobs of the user on that printer. In this example, the following symbols are displayed for the above-mentioned three states:
For the first state ("active"): an illustration of a document with a pen;
For the second state ("passive"): an illustration of a document;
For the third state ("error"): a notice board in front of a document.

The said set of print jobs monitored by the monitor function can be the complete set of jobs on the printer concerned, but it can alternatively be a sub-set. This sub-set can only be selected in the Job Control window 20, space 21, by clicking the required print jobs with the mouse, followed by clicking the monitor menu in the menu bar. When Job Monitoring is called up from the start menu of the desktop software, the set always contains all the jobs. The monitor function is dynamic: print jobs can be added to a monitored set.

In response to a double click of the mouse on a monitoring icon, the Job Control window of the printer concerned is opened, so that the user can inspect the complete

status of his jobs.

A plurality of icons can also be displayed simultaneously on the screen, so that the user can inspect the status of different sets or printers simultaneously.

If the "by alerts" mode is selected, message windows appear only if there is a user-selected change of status of a print job from the set. An example of such a window is shown in Fig. 13.

In the above-mentioned embodiments, the desktop software is previously stored in the workstations. In a variant, the desktop software may be stored in a storage medium such as a floppy-disk or a CD-ROM disk and then the storage medium is delivered to the user so that the user can install the desktop software in the workstations of the information-processing system.

In another variant, the desktop software can be transmitted through the Internet or other networks so that it can be installed in the workstations of the information processing system.

Although the invention has been described with reference to the above exemplified embodiment, it will be clear to the skilled man that other embodiments are possible within the text of the claims. They are considered to come within the scope of protection of this patent.

4. Brief Description of Drawings

Fig. 1 shows an information-processing system in which the invention is situated.
Fig. 2 is a diagrammatic overview of the software according to the invention.
Figs. 3 to 13 show information windows displayed by the software according to the invention on the workstation screen.

Fig.1

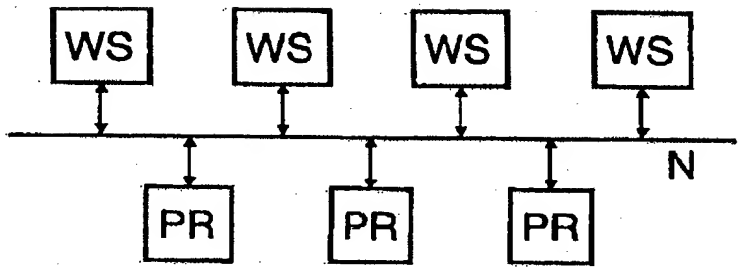

FIG. 1

Fig.2

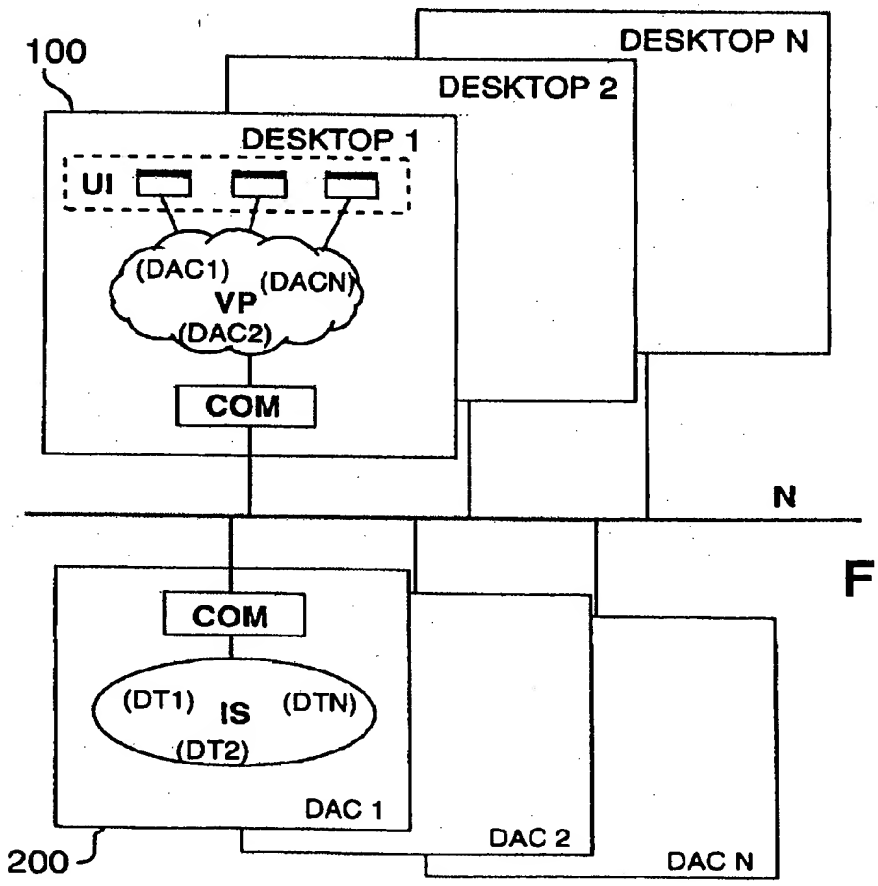

FIG. 2

Fig.3

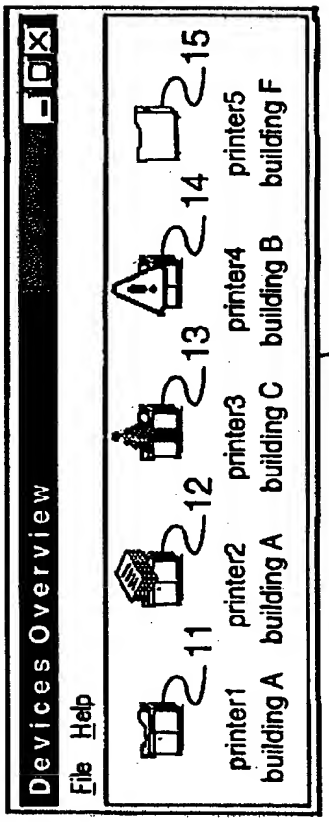

Fig. 3

Fig.4B

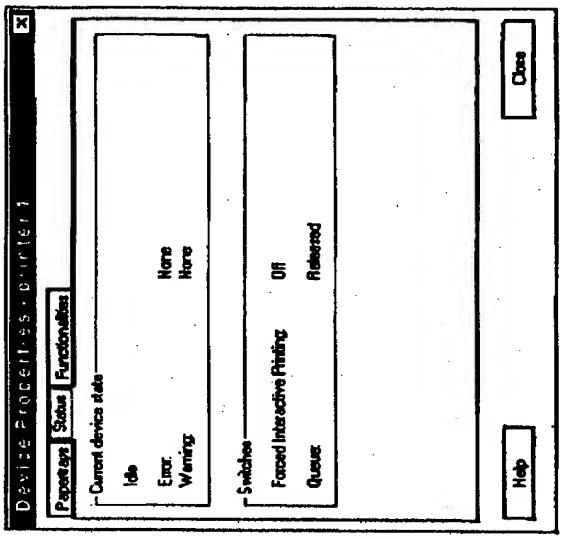

FIG. 4B

Fig.4A

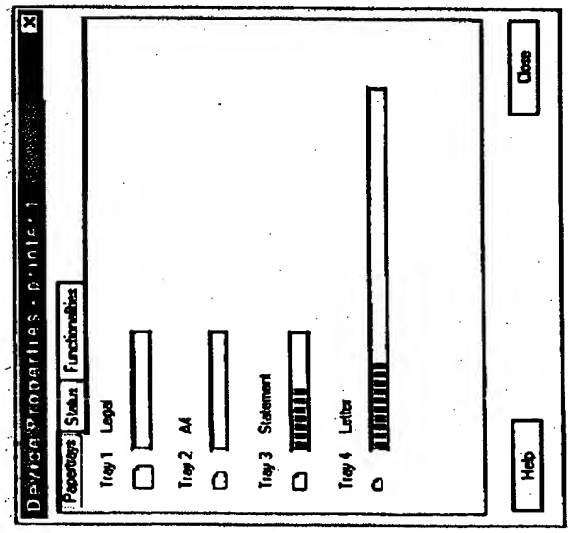

FIG. 4A

Fig.5

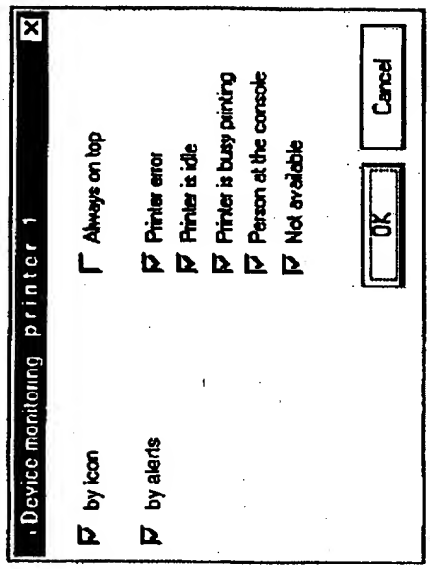

Fig. 5

Fig.6B

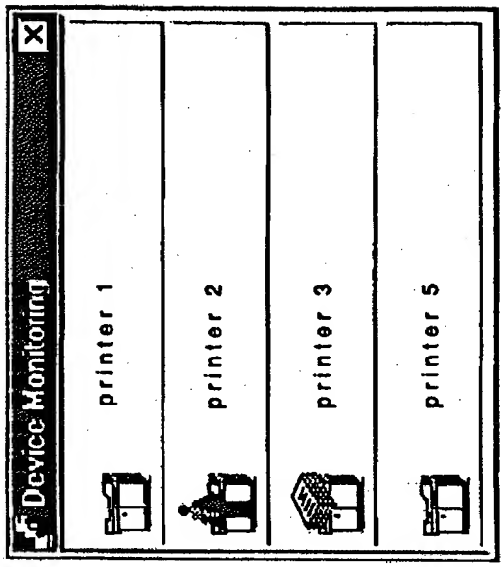

Fig. 6B

Fig.6A

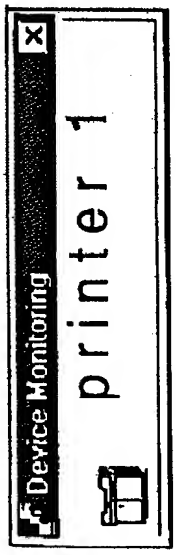

Fig. 6A

Fig.4C

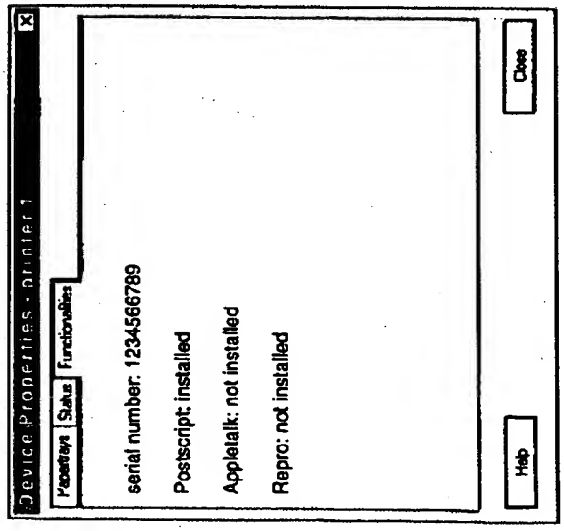

Fig. 4C

Fig.12

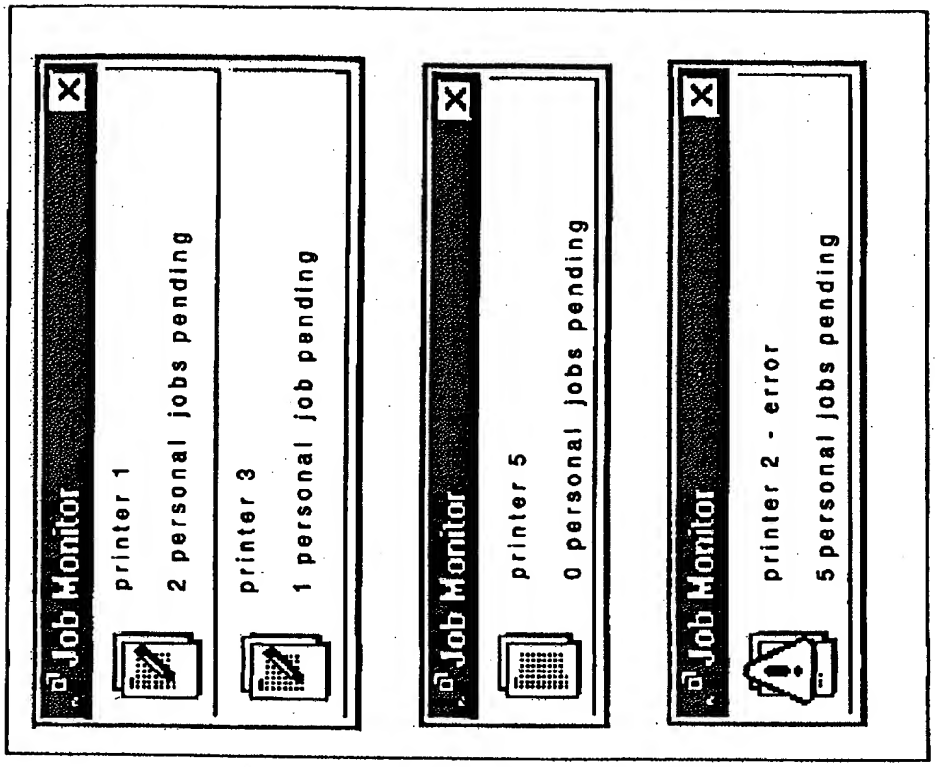

Fig. 12

Fig.7

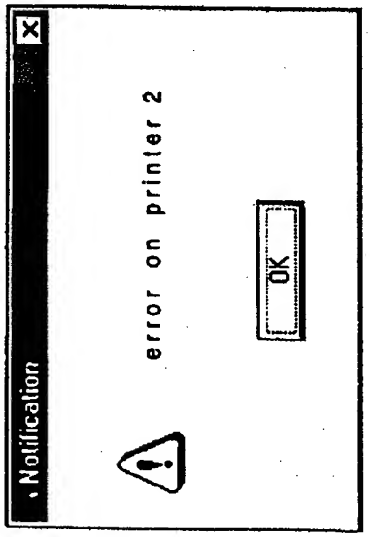

Fig. 7

Fig.8

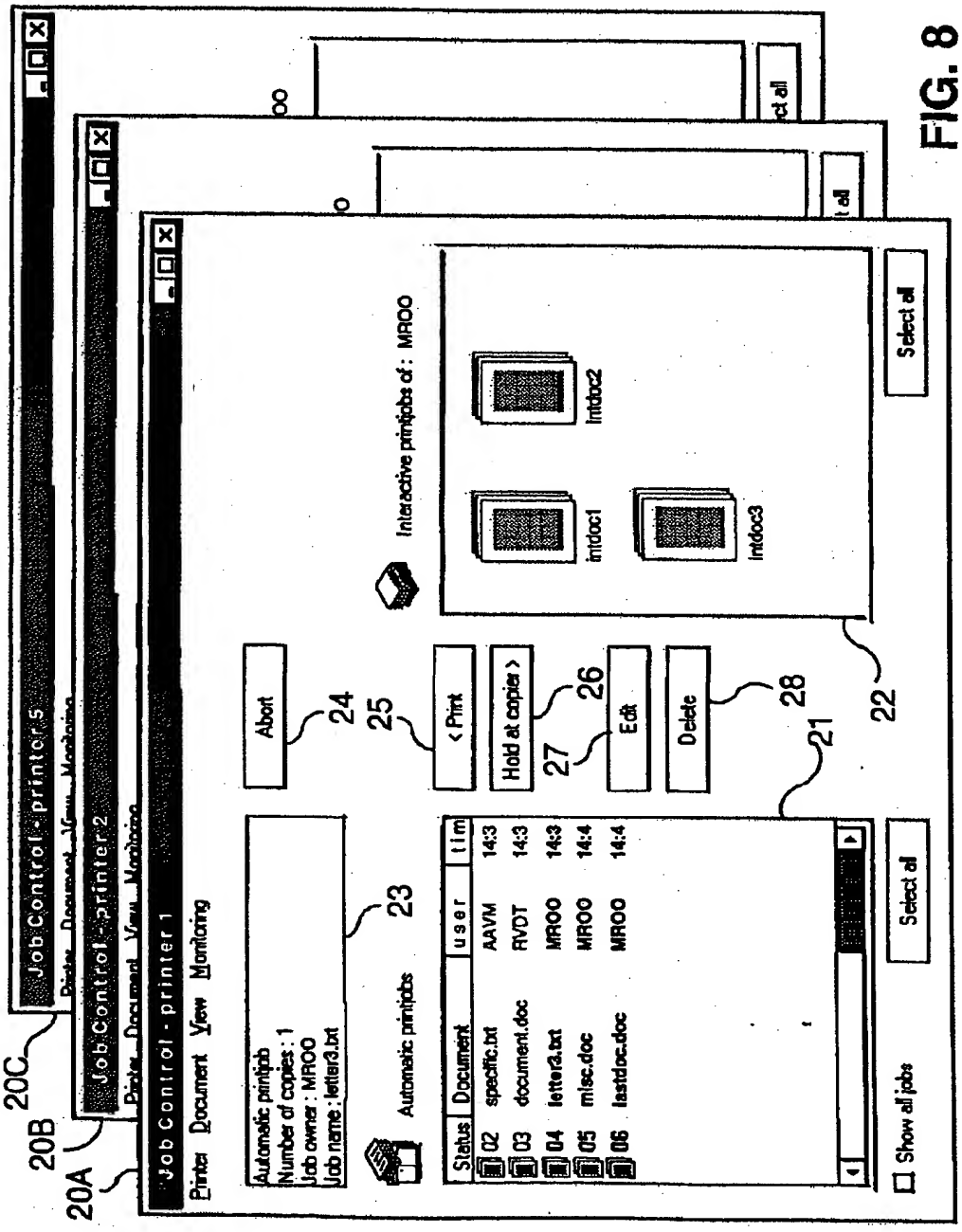
Job Control - printer 5
Job Control - printer 2
Job Control - printer 1
Printer Document View Monitoring
20C
20B
20A
Automatic printjob
Number of copies : 1
Job owner : MROO
Job name : letter3.txt
Automatic printjobs
23
Abort
24
25
< Print
Hold at copies >
26
27
Edit
Delete
28
21
Interactive printjobs of : MROO
intdoc1
intdoc2
intdoc3
22
Select all
Status
Document
user
tim
02 specific.txt AAVM 14:3
03 document.doc RVDT 14:3
04 letter3.txt MROO 14:3
05 misc.doc MROO 14:4
06 lastdoc.doc MROO 14:4
Show all jobs
Select all

FIG. 8

Fig.9

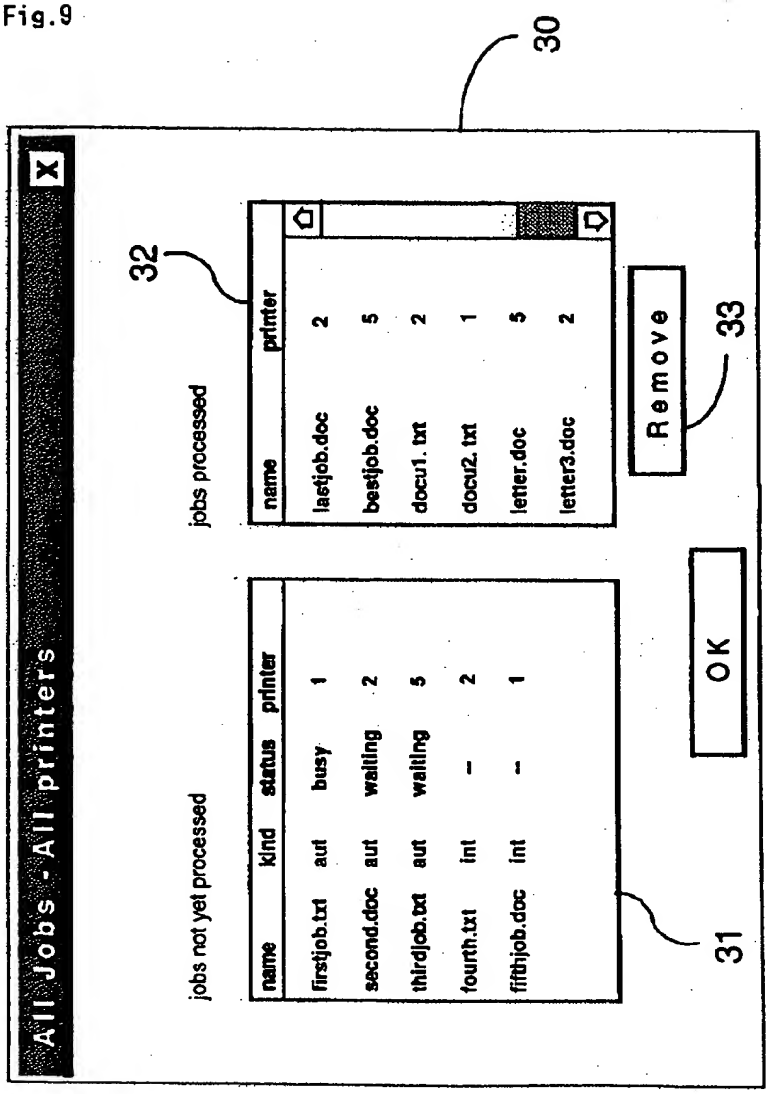
30
All Jobs - All printers
jobs not yet processed
name kind status printer
firstjob.txt aut busy 1
second.doc aut waiting 2
thirdjob.txt aut waiting 5
fourth.txt int -- 2
fifthjob.doc int -- 1
31
32
jobs processed
name printer
lastjob.doc 2
bestjob.doc 5
docu1. txt 2
docu2. txt 1
letter.doc 5
letter3.doc 2
Remove
33
OK

Fig. 9

Fig.13

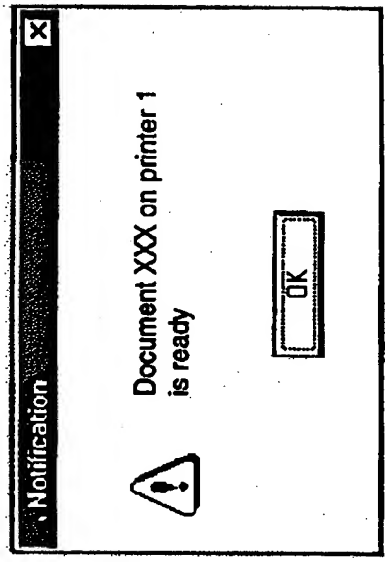

Fig. 13

Fig.10

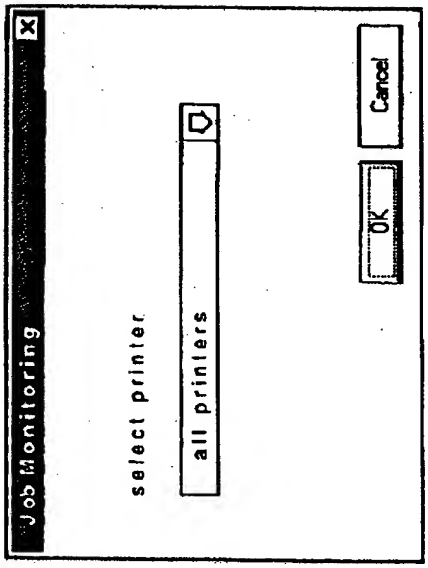

Fig. 10

Fig.11

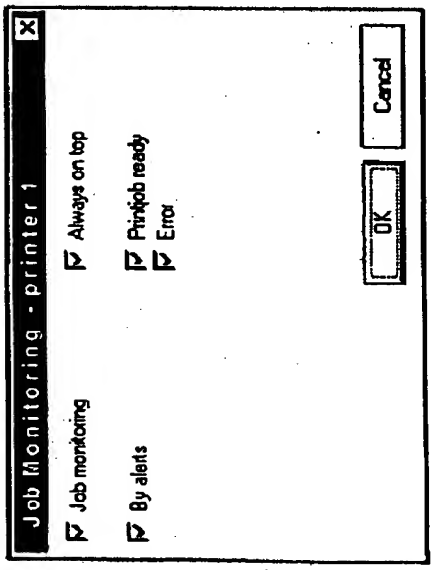

Fig. 11

1. Abstract

In an information-processing system comprising workstations for users and a number of printers on which it is possible to print print files made at a workstation, all connected by a network, the print jobs of a user which have been sent to the printers is presented at his workstation in a list in combination with the name of the printer to which they have been sent.

This applies to jobs which have not yet been finished, and in this case the status of the job is also indicated, and it also applies to jobs that have already been finished.

In this way a user can readily find his jobs.

2. Representative Drawing

Fig. 9

Japanese Publication number : **11-327848A**

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] At least one workstation equipped with a processor, a display screen, and operator control means, such as a keyboard and a mouse, Are information processing system including the digital network where some printers equipped with the control unit, respectively, and a workstation and a printer were connected, and it communicates with a printer. Or a workstation is equipped with the program personalized for [specific] users in order to receive. or [transmitting a print job to said printer, and calling status information from said printer] -- A means by which said program collects the information about the condition of said user's print job in two or more predetermined printers, About a means to update the outline by which said user's print job was realized, and each print job Information processing system including a means to display the outline by which the print job of said user including discernment of the printer by which the print job was transmitted at least was realized on the workstation display screen.
[Claim 2] The system according to claim 1 by which said program displays the already ended print job separately on the workstation display screen.
[Claim 3] The system according to claim 1 by which said program displays the print job which has not been ended yet on the workstation display screen with the information about those current conditions.
[Claim 4] A system [equipped with the means removable from the outline which had the already ended print job displayed by the command by the user when the operator control means for specific print jobs had said program] according to claim 1 or 2.
[Claim 5] The system containing all the printers to which said some of predetermined printers were connected according to claim 1.
[Claim 6] At least one workstation equipped with a processor, a display screen, and operator control means, such as a keyboard and a mouse, Are the program used for information processing system including the digital network where some printers equipped with the control unit, respectively, and a workstation and a printer were connected, and it communicates with a printer. Whether a print job is transmitted to said printer, and status information is called from said printer or in order to receive A means for it to be personalized for [specific] users and to collect the information about the condition of said user's print job in two or more predetermined printers, About the means and each print job which update the outline by which said user's print job was realized The computer read possible storage with which the program for operating each workstation as a means to display the outline by which the print job of said user including discernment of the printer by which the print job was transmitted at least was realized on the workstation display screen is recorded.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the information processing system containing at least one workstation for users, and some printers which can print the print file created by workstation.

[0002]

[Problem(s) to be Solved by the Invention] When using this kind of system, it is often difficult for a user to remember the printer which transmitted the specific print file. Although one possible method of searching for a print job is checking the print queue according to individual, this is work which time amount requires. The ended print job disappears from a print queue, and it becomes impossible moreover, to completely find it after that. A user does not have an approach after that besides investigating whether each printer is seen and its own print exists there by chance.

[0003]

[Means for Solving the Problem] A means by which the program to which this invention operates in a workstation for the communication link with a printer collects the information about the condition of said user's print job in two or more predetermined printers, About a means to update the outline by which said user's print job was realized, and each print job The need for above-mentioned information is satisfied by including a means to display the outline by which the print job of said user including discernment of the printer by which the print job was transmitted at least was realized on the workstation display screen.

[0004] Thus, a user can obtain quickly the outline of a printer in which all their unsettled print job and unsettled they were transmitted, even if they are already completed.

[0005] With 1 operation gestalt of this invention, the current condition of the print job which has not been ended yet is given. This can be performed in the form of the serial number in the following forms, i.e., the forms of "error generating waiting and during processing", or those print queues. Moreover, the condition of the already ended print job can also be given. In that case, a condition is the printer equipped with the means of the common knowledge which took the form of a supply tray where the print was placed, or was suitable for the purpose, and when the supply tray on which the print was placed is empty, it "is removed."

[0006] With another operation gestalt, the ended print job is not removed from an outline until a user chooses them and takes out a remove command to them. This is more advantageous than the case where it removes automatically, after specific time amount. Thus, a user can also use a list as storage assistance which makes a user remember that the print of a specific job must be taken out.

[0007] The outline of a print job can be displayed about all printers printers [not only / predetermined / two or more / not only] in a system. Although it can set up for example, during a configuration, this can also be carried out by choosing a specific printer by the setup procedure, when required.

[0008]

[Embodiment of the Invention] Next, this invention is explained in relation to the operation gestalt of the following instantiation, and an attached drawing.

[0009] Drawing 1 shows the system which consists of a workstation WS connected by the local network N and a printer PR. A workstation is PC and, in each case, it has a processor, a display screen, a keyboard, and a mouse. A printer is a digital copier which contains a scanner, a printer, operator control equipment, and the contact (a digital access controller or DAC) for connecting with a network, respectively, and processes the print job sent from the workstation. Furthermore, although it has only printer ability, it is possible to use the machine which also has a control system suitable for the functionality explained below. Below, these all machines, copying machines, and printers are called a "printer." the user who wishes for making a specific data file print from a workstation -- therefore, it can choose from some the printer or all the printers of a system.

[0010] In order to communicate with a printer and to show a user the information about it, there is software which operates in each connected workstation, and, below, this is called "desktop software." This program is personalized. That is, this identifies the user itself at the time of starting, and operates with an instruction of only one user that inputted a user's authorization code.

[0011] Although desktop software is omitted below and is also called a "desktop", this consists of some subprograms roughly shown in the block 100 of drawing 2 . The nucleus of desktop software is formed of the subprogram displayed as the "virtual printer", this communicates with the connected printer, and as long as it is important for a workstation user, each property and condition of these printers are updated. A user can choose the information only on which you want to display when about the print file which should be processed the condition of the connected printer, and there so that the following description may explain. Exchange of the data about these problems between desktop software and a printer is limited to the important thing for the requirements for a user. Since what is necessary is just to lose by this that a load is applied to a network beyond the need, and only for related information to exist in a workstation further, and to process it, a load is not applied to the throughput of a workstation beyond the need.

[0012] by equip a "virtual printer" program with the operator control program call "a user interface (UI)" below, this be the approach that he can understand the communication link between a user and desktop software to a user, it control by the form of the keystroke of a keyboard, or the window on the display screen, and information be show in the window, and a user can choose an element and can control the actuation by motion of a mouse. Desktop software is equipped with communications program COM which controls the data transfer between the printers through a network again.

[0013] The schematic diagram of the communicating software in DAC of a printer is shown in the block 200 of drawing 2 . Specifically, this is formed of the "information server" IS for sending and receiving digital information, such as status information about the print job under processing, between workstations by the printer itself and the printer. An information server updates the data about the information which each desktop needs, and when required, it transmits only really required information. The information server is equipped with communications program COM for controlling the data transfer between the desktops through a network again.

[0014] The file of the digital data transmitted to a printer through a network in order to print by the printer is either the 1st type or the 2nd type. Although the file of the 1st type called an automatic print job below must be printed without dealing with an addition of direct, i.e., an operator, by the printer, the file of the 2nd type called an interactive print job below must only be memorized in printer memory,

and don't print it until it requires clearly by [whose an operator is a printer] by the way choosing using an operator control means. The attribute added to a file shows the type of a related file.

[0015] Processing of the data file of the 1st type is called automatic printing (AP) by this description.

[0016] Below, processing of the data file of the 2nd type is called interactive printing (IP). This procedure is as follows.

[0017] In order to print by interactive printing, the data file transmitted by workstation through a network is received by DAC. As for this, an owner's identifier, the identifier of the file itself, etc. extract some predetermined discernment data from a file. Next, a file is memorized as it is by the store in a printer, for example, a hard disk, without being changed, and a machine moves to a standby condition about this job after that.

[0018] DAC manages the managerial system containing the discernment data of all the memorized data files that should be printed. If a new file is supplied through a network, DAC will add the discernment data to a managerial system in the name of an owner / transmitting person.

[0019] So to speak with said managerial system of DAC, a disk forms "logical storage space" of the lot for a data file, and each logical storage space is assigned to one user. Therefore, the storage in a user's logical storage space means in fact that a file is memorized by the disk and registered into a managerial system in the name of the user. Logical storage space can be protected in code of a proper to an owner/user. That is, as a practical question, if an operator is not after inputting this code through the operator control means of a printer, he cannot obtain information on the file memorized in specific logical storage space.

[0020] When an operator wants to make a specific interactive print file printed here, an operator has to choose the file with a printer operator control panel, and has to give a printing command by operating a start key. It is answered, a data file is taken out from a disk, and it is changed into the data which can be printed, and this is processed by the printer and forms a print. A transmitting person can protect an interactive print file in code. This code is the format of the attribute of a print file. When a user wants to print this file to a dialogue, a user has to drive in a security code from an operator control panel, before printing a file.

[0021] In principle, when finishing printing a data file to a dialogue, it is memorized by the disk and registered into a managerial system until it is removed by the user itself or the printer manager.

[0022] A printer manager can make a machine the mode in which an automatic print job is not accepted. In that case, an input automatic print job is changed into an interactive print job by the printer, and is memorized by the disk by it.

[0023] Some printers in this system are digital copiers as a matter of fact, and can also create the copy of the original by scanning the original and printing the digital image data generated by it as already stated. [at least]

[0024] Therefore, there is a job (automatic print job) supplied, for example from a workstation (PC) from the job (a print job and interactive print job) started by the user of a machine itself, and the distant location. Although operated in the command control mode which in the case of the former a printer answers an initiation command from an operator control panel, and puts a duplicate process into operation, in the case of the latter, a printer operates in the autonomous mode which puts a duplicate process into operation spontaneously.

[0025] The user who went there in order [of a machine] to put a job into operation by the key by the way memorizes frustration very much, when the automatic print job by which remote starting was carried out when [which was going to put its job into operation] starts. Then, before a user can create his copy, he has to wait until the job by which remote starting was carried out is completed, or has to interrupt the job according to "interruption" device at least. Actual especially by the machine used frequently, it generates frequently and this produces troublesomeness and delay as a result.

[0026] In order to protect a user's position in a machine as much as possible, the physical interaction by the operator in a machine is answered, a machine moves to command control mode, or only the 1st predetermined latency time is still the mode. A machine cannot move to autonomous mode among this latency time. This provides a user with an opportunity to make the time amount of a starting [without the user itself hurrying the job] sake by [of a machine] starting a key or by the way, arranging two or more documents to the paper tray of a machine by a certain dialogue.

[0027] Furthermore, after activation of a job is completed in command control mode, only the 2nd latency time predetermined in a machine is still command control mode.

[0028] Therefore, when a user wants to continue a copy or an interactive print job further, the point is not exceeded to an automatic print job. Moreover, a machine cannot shift to autonomous mode into said 2nd latency time. The 2nd latency time can be made equal to the 1st latency time. The actual value of the latency time is 2 minutes from 30 seconds.

[0029] Next, above-mentioned desktop software is explained further.

[0030] Desktop software contains the following module.

[0031] The outline of all the connected available printers, and the display of those conditions (it is hereafter called an equipment outline)

Possibility of the break in in the outline of a current print job, and a setup of each job (it is hereafter called job control)

Information presentation about progress of a current print job (it is hereafter called a job monitor)

The mode information shown with three modules of desktop software is dynamic. That is, if the shown mode has change, it will be reformed directly immediately.

[0032] Desktop software is personalized, therefore informational presentation and the possibility of control should care about being turned to one specific user's hope again.

[0033] It can start from the general initiation menu displayed when desktop software is chosen on a workstation display screen, and three above-mentioned program modules give sequential explanation next about it.

[0034] Drawing 3 shows the window 10 displayed on the workstation display screen, after a user chooses an "equipment outline (Device Overview)" option by desktop software. This window displays the notation which shows the condition of that printer about each printer. This example is shown in drawing 3 . Furthermore, since short explanation of a printer is attached to each notation, it is clear which printer is related.

[0035] The 1st notation 11 is the illustration with which the printer was stylized. The printer of this ** can use this notation for a print job, and it shows that it is a current idle condition. The 2nd notation 12 shows the crest of a printer and the form piled up on it, and it is shown that this machine is engaged in an automatic print job in autonomous mode. The notation 13 shows a printer and those who are before

that, the machine is in command control mode, therefore it is engaged in either a print job or an interactive print job, or is among the latency time of the above-mentioned 1st or the above-mentioned 2nd, and it is shown that an automatic print job cannot be put into operation in the meantime. A notation 14 is the illustration of a printer and the warning plate piled up on it, and shows that this printer is in a malfunction condition. A notation 15 shows that it can use neither for a print job nor a print job at present, although it is the illustration of the printer which excluded details and this printer is connected.

[0036] It can judge whether the machine which a user should transmit his print job to which printer, wanted to perform a print job or an interactive print job when, or was chosen from these notations is vacant. Since it can stop without difficulty by the way while operating an automatic print job, but the reason for being more persuasive whose user is a machine is needed in order to pass another user of a machine by the way in order to perform a print job or an interactive job in "interruption" mode, especially the distinction display of use by the busy condition, i.e., autonomous mode, and use with command control mode is convenient.

[0037] A user can choose one of the notations, therefore can choose one of the printers, and, subsequently can call one of the following functions with either the menu of the top bar of a window, a pop up menu or a mouse right carbon button.

[0038] The waiting related print job of a printer is displayed. In this function, an automatic print job and an interactive print job are displayed separately, and can also operate these. This function forms a part of "job control" program module, and explains it in detail there. This function can also double-click and call a printer notation with a mouse.

[0039] The property and condition of a printer of being related are displayed.

[0040] The monitoring function which presents the information about the condition of a printer that it is related during an activity, on the display screen is called.

[0041] A related printer is defined as a default printer.

[0042] In the above-mentioned function in which the property and condition of a printer are displayed, a window including this information is displayed on the display screen, and information is distributed by three tab cards which can be seen now by selection of those tabs as shown in drawing 4 A, drawing 4 B, and drawing 4 C. The stock of the print sheet of a printer tray is displayed on the 1st tab card, and the information about the functionality by which the current operating state of a printer was displayed and installed in the 2nd tab card is displayed on the 3rd tab card.

[0043] According to selection of an above-mentioned monitoring function, the window where a user can set up the display format of favorite printer condition data on a workstation display screen is displayed (refer to drawing 5). There are mainly two kinds of display formats. That is, it is based on the message displayed as what is depended on the permanent icon on a screen ("based on an icon") on a screen when change of a printer condition occurs ("based on warning").

[0044] When the monitor by the icon is set up, an icon displays the notation illustration in the condition that it is just shown in drawing 3 . The example of such an icon is shown in drawing 6 A. A user can also make coincidence maintain the condition of various printers again. In that case, a screen displays the icon of each supervised printer, as shown in drawing 6 B. By double-clicking an icon with a mouse, the function which displays the waiting related print job of a printer is called. About this point, explanation of "job control" program module is referred to again.

[0045] When a monitor is based on a message, a user directs change in the condition where he wants to receive a message, therefore can avoid an unnecessary report. The example of this type of message is shown in drawing 7 .

[0046] Drawing 8 shows the related layout of the workstation display screen after choosing "job control" option of desktop software, in order that a user may hold the outline of the present print job.

[0047] Although some windows 20A, 20B, and 20C are displayed here, each corresponds to the printer by which a user's print job exists at the time. Therefore, there is a window where only the same number as the number of the printers by which a user's print job exists at the time is displayed. When this function is called from an "equipment outline" module, only the window of the printer chosen there is displayed.

[0048] A window 20 includes the space 23 for specifying the space 21 for automatic print jobs, the space 22 for a user's interactive print jobs, and an active print job. Moreover, there is some "keys" which can be operated with a mouse.

[0049] The queue of a user's automatic print job is included in space 21 with the data of those conditions (number in a queue), an identifier, and others that are chosen by the user during a setup. A user can also make it display including all waiting automatic print jobs, i.e., other users' thing, by clicking the switching and balancing box at the lower left of space 21. In that case, a user's own job is the approach of distinguishing from others, for example, is reproduced by coloring. When a job control module is called from the "equipment outline" module of a specific printer, the display containing all waiting automatic print jobs, i.e., other users' thing, is default setting.

[0050] The outline of a user's waiting interactive print job reproduced by the icon accompanied by the identifier corresponding to the property of a job is included here in space 22. These do not go into a queue, and they are not performed until a user starts with an operator control panel. In order to acquire [rather than] much information about these jobs, a user can also display them on a detail list.

[0051] At the time, space 23 displays the condition ("unused", "error") of a printer, when there is not data of an active print job or an active job. The following data (a print job, an automatic print job, interactive print job), i.e., the type of a job, the number of sheets of a print, the identifier of the owner of a job, and the identifier of a job are included in this space. A key 24 is beside space 23 and, thereby, an active job can be interrupted ("cancel").

[0052] By the key 25, the interactive print job chosen in space 22 can be changed into an automatic print job, and it can add to the queue of space 21, and a key 26 can change into an interactive job the automatic print job chosen in space 21, and can move it to space 22.

[0053] By the key 27, a printing setup of the print job chosen in either of the space 21 or 22 can be displayed. The same effectiveness is attained also by double-clicking a job name with a mouse. This is answered, on the workstation display screen, a window opens and all setup is displayed. A setup can also be changed in this window.

[0054] Finally, the print job chosen in either of the space 21 or 22 is removable with a key 28.

[0055] The above-mentioned function can also be called choosing a job and choosing from the "document (document)" menu of the menu bar of the upper part of a window 20, or by choosing with the pop menu which appears when a job name is clicked with a mouse right carbon button.

[0056] A user can use the function explained in relation to keys 24-28 only to his own print job.

[0057] The "display (View)" menu of the menu bar of the upper part of a window 20 offers the following option.

[0058] Selection of the display format of an automatic print job (selection of the information to display) Selection of the display format of an interactive print job (when an icon, a list, and a list is chosen, which information is displayed?)

(It can set to all printers) table ** of this information about the printer by which all a user's print jobs and jobs exist, and the already ended print job -- the function of this last is explained below, referring to drawing 9 .

[0059] Selection of this function displays a window 30 on the workstation display screen. This window 30 includes the space 31 where the list of all print jobs of the related user who has ended yet by no printers is displayed with the printer by which those condition (error waiting and during use) and they exist. This list shows both and those types of an automatic print job and an interactive print job. If the identifier of the print job of space 31 is double-clicked with a mouse, since the job control window (drawing 8) of the printer by which the job exists will open, a user can see the condition of the job within a queue (when it is an automatic print job), can operate a job, and can check and/or change a printing setup.

[0060] A window 30 also includes the space 32 which displays the list of all print jobs of the related user who ended by all printers again with the printer which processed it. The key 33 is formed in the bottom of space 32, and a user can remove a print job from a list, after choosing this by clicking a mouse.

[0061] When the list of the space of space 31 or 32 is too long to be able to finish settling it in the space, a scroll bar appears and it can arrive at the job which cannot finish being settled in a window by that cause.

[0062] Although the list of print jobs which space 32 ended can also display directions of a condition, this is not shown here. In the case of the printer equipped with two or more supply trays, the machine control system of a printer knows the supply tray on which the print was placed, and this information can be displayed on a list. A printer can be equipped also with the sensor which determines again whether a supply tray has a print. In this case, a machine control system can also know it, if the pile of the supplied print is taken out from a tray. This information can also be displayed on the list of space 32. This status information can take the format of "it existing in the supply tray X", or "having been taken out" out.

[0063] By this function, it can always know where [of a queue] a user has his print job, or where its own print is placed, and this is very convenient in the environment where some printers are used especially.

[0064] A monitoring function can also operate again only about the subset as which all the printers in a system were specified. This can be set up by the setup function of a program, when a system is constituted.

[0065] The "monitor (monitor)" menu of the menu bar of the upper part of the job control window 20 sponsors an opportunity to start the monitoring function of a related user's print job in a related printer. This function can also be called from the initiation menu of desktop software, and is explained below.

[0066] A monitoring function is for continuing telling a user about the condition of one's automatic print

job. This can function to a part of all present job or job chosen by the user.
[0067] There are the following three modes in a monitoring function.
[0068] The 1st mode "active": There is still at least one job which has not been ended among sets. The number of the jobs which have not been ended yet is also contained.
[0069] The 2nd mode "passive": All the jobs of a set were completed or a set is empty.
[0070] The 3rd mode "error": One of the jobs caused the error.
[0071] Selection of the monitoring function of the initiation menu of desktop software is answered, and the window where a user can choose one, plurality, or all printers on the workstation display screen at a monitoring function is displayed. This is shown in drawing 10 . After a user clicks "O.K." with a mouse, the window where a user can set up liking of the display format of the condition of his personal print job on a workstation display screen is displayed (refer to drawing 11). There are mainly two kinds of display formats. That is, it is based on what is depended on the permanent icon on a screen ("based on an icon"), and the message which appears on a screen when the condition has change ("based on warning"). In the case of the latter, a user directs change in the condition where he wants to receive a message, and, thereby, can avoid an unnecessary report.
[0072] If a user inputs liking and presses the "O.K." key, a function will start after that. When icon mode is chosen, an icon is displayed on the display screen here.
[0073] Shortly after starting a job monitor from job control, the selection window of drawing 10 is excluded (the printer of a job control window is chosen automatically), and the window of drawing 11 is displayed.
[0074] Drawing 12 shows a monitor icon. The icon other than the identifier of the printer by which it is active includes the notation which shows the condition of a set a user's print job in the printer. In this example, the next notation is displayed to three above-mentioned conditions.
[0075] case [of the 1st condition ("active")]: -- case [of the 2nd condition ("passive") of an illustration of a document and a pen]: -- case [of the 3rd condition ("error") of an illustration of a document]: -- although the above-mentioned set of the print job supervised by the warning plate monitoring function before a document can be considered as the perfect set of the job in a related printer, it can also be made into a subset as an exception method. This subset is the space 21 of the job control window 20, and after clicking a required print job with a mouse, it can be chosen only by clicking the monitor menu of a menu bar. When a job monitoring function is called from the initiation menu of desktop software, a set always includes all jobs. The monitoring function is dynamic. That is, it can add to the set which has a print job supervised.
[0076] Since the double click of the mouse on a monitor icon is answered and the job control window of a related printer opens, a user can check the sound condition of his job.
[0077] Since two or more icons can also be displayed on coincidence on the display screen, a user can check the condition of various sets or a printer to coincidence.
[0078] Only when there is change chosen by the user of the condition of the print job from a set when the mode "depended on warning" was chosen, a message window appears. An example of such a window is shown in drawing 13 .
[0079] With an above-mentioned operation gestalt, desktop software is beforehand memorized to a workstation. With a deformation gestalt, desktop software is memorized by storages, such as a floppy

disk and a CD-ROM disk, and a storage is supplied to a user so that a user can install desktop software in the workstation of information processing system in that case.

[0080] With other operation gestalten, desktop software is transmitted through the network of the Internet and others so that it can install in the workstation of information processing system.

[0081] As mentioned above, although this invention was explained in relation to the operation gestalt of the above-mentioned instantiation, probably, it will be clear to this contractor for other operation gestalten to be possible within the limits of **** of a claim. They shall be contained within the limits of protection of this patent.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the information processing system with which this invention is located.

[Drawing 2] It is the schematic diagram of the software by this invention.

[Drawing 3] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 4 A] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 4 B] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 4 C] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 5] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 6 A] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 6 B] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 7] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 8] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 9] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 10] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 11] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 12] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Drawing 13] It is drawing showing the information window displayed on the workstation display screen by the software by this invention.

[Description of Notations]

AP Automatic printing

COM Communications program

DAC Digital access controller

IP Interactive printing

N Local network

PR Printer

UI User interface

WS Workstation

[Translation done.]

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